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October, 1935

COMMERCIAL FERTILIZERS

REPORT FOR 1935



Connecticut
Agricultural Experiment Station
New Haven

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COMMERCIAL FERTILIZERS

REPORT FOR 1935

E. M. BAILEY

*Chemist in Charge
Department of Analytical Chemistry*

Connecticut
Agricultural Experiment Station
New Haven

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COMMERCIAL FERTILIZERS REPORT FOR 1935

STATUTE AND REGULATIONS REGARDING COMMERCIAL FERTILIZERS

The term "commercial fertilizers" as used in the Connecticut fertilizer statute includes any and every substance imported, manufactured, prepared or sold for fertilizing or manuring or soil amendment purposes, except barnyard manure and stable manure that have not been artificially treated or manipulated, marl and lime.

The seller is responsible for the proper labelling of each package of fertilizer, for the registration of each brand sold or offered for sale, for the payment of the required analysis fee and for the payment of the tonnage tax. If, however, proper labelling, registration and payments of analysis fees and of tonnage tax have been provided for by the manufacturer or by another responsible person, all sellers of such brands are released from the above mentioned requirements. The retailer, therefore, should assure himself that the requirements of the law have been met by the manufacturer of the brands which he handles, or himself be prepared to meet all these requirements.

It frequently happens that a manufacturer or jobber sells fertilizer materials which are the products of, and which are registered by, another firm or individual. Distributors in such cases should sell such materials by the exact brand names under which they are registered in order that there may be no mistake as to the identity of the brands. Any change in the brand names, or failure to make the identity of the brand and its manufacturer clear, makes the distributor liable for the registration of the product as his own brand.

The law exempts from registration, and from other requirements referred to, only (1) fertilizers passing through the state in transit; (2) fertilizers and fertilizer materials shipped to regular fertilizer factories to be used for manufacturing purposes; and (3) fertilizers and fertilizer chemicals sold to the Connecticut Agricultural Experiment Station for experimental purposes.

NOTE: Analyses reported in this bulletin were made by Messrs. Nolan, Mathis and Walden; microscopic examinations by Miss Shepard; inspection and sampling by Mr. Churchill; and compilations by Mrs. Vosburgh.

"COMPOST" MATERIAL AND "SOIL" SOLD AS "FERTILIZER"
FOR LAWN DRESSING

There is an increasing practice in Connecticut of selling compost material from house to house as a top dressing for lawns and shrubbery. Such material is sold by itinerant vendors who retail it by the bushel or other unit of measure at approximately \$1.00 for 100 pounds. The compost as sold usually contains from 25 to 50 per cent of organic matter and the remainder is water and soil. At the price charged, the organic matter costs from 2 to 4 cents per pound. Similar material may be obtained at no higher price in a good grade of commercial peat moss or in commercial dried farm manures, such as sheep, cattle or poultry manures. These latter also have the advantage of being uniform and dependable in composition, and, in the case of dried manures, of supplying some actual plant food in addition.

Purchasers of such "top dressing" should understand that it has some value because the organic matter present increases the moisture-holding capacity of light, sandy soil and adds needed humus. However, any representation that such material serves as a regular mixed fertilizer is unwarranted because it contains practically no plant food, i.e. nitrogen, phosphoric acid and potash, for which regular "complete" fertilizers are valuable.

There is another type of material that is also being offered for potting plants and for dressing lawns. A product of this type called "Wright Soil" was submitted by a purchaser and examined. The sample was found to contain 2.01 per cent of moisture, 82.22 per cent of ash, 77.08 per cent of ash insoluble in acid, and 15.77 per cent of organic matter. The nitrogen content was 0.71 per cent, phosphoric acid 0.55 per cent and potash (water-soluble), 0.23 per cent. The product is therefore largely soil with a little humus added, and possibly also reinforced slightly with mineral forms of plant food. The material has the character of soils ordinarily classed as fertile. Microchemical tests made by the Soils Department showed approximately the same degree of available fertility as a good garden loam. While fertilizer elements in the product may be sufficient for good growth if the whole topsoil is replaced with this material, the small amounts which one can conceivably afford to use at the price demanded are not adequate to sustain vegetation without supplements from other sources. The purchaser should understand that products of this type are not "complete" fertilizers in the accepted sense of that term or in the popular understanding of it.

No regulation has been made to require these types of materials to be registered as "fertilizers". They are soil supplements or amendments; but since they generally do not contain plant food in excess of 1 per cent of nitrogen, phosphoric acid or potash, they are not recognized as fertilizers subject to registration. In nitrogen content they sometimes exceed 1 per cent, but when such nitrogen comes from peat or similar sources, and has resisted transformation over long periods of soil decomposition, its availability as plant food is limited or negligible and it may be doubted if it is within the intent of the fertilizer law to recognize it as a registerable item of composition.

When such products are sold by itinerant vendors, local authority will, of course, require a vendor's license, provided local ordinances make it necessary.

DEFINITIONS OF FERTILIZER MATERIALS AND INTERPRETATION OF TERMS USED IN FERTILIZER CONTROL

For the purpose of bringing about a better understanding among control officials and the fertilizer industry as to the identity of fertilizer materials and the significance of terms used in interpreting results of analysis, a special committee of the Association of Official Agricultural Chemists was appointed in 1921 to consider this question, and from time to time pronouncements have been made.

The following definitions and interpretations are now official.¹

DEFINITIONS

ACIDULATED FISH TANKAGE, ACIDULATED FISH SCRAP

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid.

ACTIVATED SEWAGE PRODUCTS

Activated sewage products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with micro-organisms. The resulting flocculated organic matter is withdrawn from the tanks, filtrated with or without the aid of coagulants, dried, ground, and screened.

AMMONIATED SUPERPHOSPHATE

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash.

ANALYSIS

Analysis, as applied to fertilizers, designates the percentage composition of the product expressed in terms of nitrogen, phosphoric acid, and potash in their various forms.

ASHES FROM LEACHED WOOD

Ashes from leached wood are unleached ashes resulting from the burning of wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

¹*Official and Tentative Methods of Analysis, A.O.A.C., 1930, page 490.*

BRAND AND BRAND NAME

A brand is a term, design, or trademark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen, but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods—below fifty per cent (50%) and eighty per cent (80%) respectively.

DISSOLVED BONE

Dissolved bone is ground bone or bone meal that has been treated with sulfuric acid.

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground, and containing not less than twelve per cent (12%) of nitrogen in organic forms.

DRIED, PULVERIZED, OR SHREDDED MANURES

Dried, pulverized, or shredded manures are what the name indicates, and not mixtures of manures and other materials.

FERTILIZER GRADE

Fertilizer grade shall represent only the minimum guarantee of its plant food expressed in terms of nitrogen (not ammonia), available phosphoric acid, and water-soluble potash.

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials.

GROUND RAW BONE

Ground raw bone is dried ground animal bones that have not been previously steamed under pressure.

GROUND STEAMED BONE

Ground steamed bone is ground animal bones that have been previously steamed under pressure.

HOOF AND HORN MEAL

Hoof and horn meal is processed, dried, and ground hoofs and horns.

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

LEACHED WOOD ASHES

Leached wood ashes are ashes from burned unleached wood with part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

MANURE SALTS

Manure salts are potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts is discontinued.

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as chloride.

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS
CONTAINING POTASH

Products secured by heating calcium phosphate with alkali salts containing potash are non-acid phosphates with potash. They are not potassium phosphate.

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

SULPHATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and one-half (2.5%) of chlorine.

SUPERPHOSPHATE

Superphosphate is a cured mixture of rock phosphate and sulfuric acid and/or phosphoric acid. The grade shall always be used as a prefix to the name. Example: 16% Superphosphate. The use of the term Acid Phosphate is discontinued.

TANKAGE

Tankage (without qualification) is the rendered, dried, and ground by-product, largely meat and bone from animals (slaughtered or that have died otherwise).

UNIT OF PLANT FOOD

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes from burned unleached wood that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O).

INTERPRETATIONS

ACTIVITY OF WATER-INSOLUBLE NITROGEN IN FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-insoluble nitrogen; they do not show the percentage availability of the material. The available nitrogen of any product is measured only by carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-insoluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. If a total nitrogen exceeds the minimum guarantee and is accompanied by a low activity of the insoluble nitrogen, the over-run shall be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method, and also below eighty per cent (80%) by the neutral method, shall be classed as inferior. This necessitates the use of both methods, also the provision as to over-run in (a), before classifying as inferior.

AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH
IS CLAIMED AS SULPHATE

Chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed one-half of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

BRAND NAME TO INCLUDE ANALYSIS OR GRADE OF FERTILIZER

The analysis or grade of a fertilizer should be included with its brand name, and so used by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

FERTILIZER FORMULA

A fertilizer formula shall express the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of tankage (7.40 nitrogen and 9.15 total phosphoric acid), and 400 pounds of sulphate of potash-magnesia (twenty-six per cent (26%) potash).

FINELY GROUND AS APPLIED TO BASIC PHOSPHATE SLAG

Finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more shall pass a 100-mesh, and ninety per cent (90%) or more shall pass a 50-mesh sieve.

FORM OF NITROGEN IN CALCIUM CYANAMIDE

The nitrogen in calcium cyanamide shall be considered as being of organic nature.

THE TERM LIME AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labelling, or guaranteeing of fertilizers or fertilizing materials, unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds.

ORDER OF TERMS

The order of terms in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third.

NAME OF A FERTILIZER MATERIAL USED AS THE BRAND NAME OR PART OF THE
BRAND NAME OF A MIXED FERTILIZER

When the name of a fertilizer material is used as part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a fertilizer material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word brand shall follow the name of the material. Example: Fish Brand Fertilizer.

STATEMENT OF GUARANTEE

The statement of guarantee of mixed fertilizers shall be given in whole numbers.

REGISTRATIONS

LATE REGISTRATIONS FOR 1934

To the brands registered for 1934 in our last report should be added:
Sutton & Sons, Ltd., Reading, England
 Sutton's Simplex Fertilizer

REGISTRATIONS FOR 1935

For 1935, 57 firms and individuals registered 325 brands of fertilizers at this Station for sale in this State. As required by statute, the brands so registered are listed as follows:

The Acme Guano Co., Baltimore, Md.

Acme 4-8-4
 Acme 4-8-10
 Acme 5-8-7
 Acme 7-6-6
 Acme 8-16-14
 Acme Fine Ground Bone
 Acme Muriate of Potash
 Acme Superphosphate

Double A Tobacco Fertilizer 5-3-5
 Sanderson's Formula B 4-8-7

American Cyanamid Co., 30 Rockefeller Plaza, New York City

Aero Cyanamid
 Ammo-Phos 11-48-0
 Ammo-Phos 16-20-0
 Granular 'Aero' Cyanamid

American Agricultural Chemical Co., West Haven, Conn.

AA Double Strength Fertilizer 8-16-14
 AA General Crop Fertilizer 2-10-2
 AA Monarch Fertilizer 4-8-4
 AA Peerless Fertilizer 4-8-7
 AA Potato and Vegetable Fertilizer 5-8-7
 AA Prolific 10% Potash Fertilizer 2-8-10
 AA Superphosphate 16%
 AA Tobacco Starter 5-5-15
 AA Top Dresser 7-6-6
 AA XL Fertilizer 3-10-4
 AAC Castor Pomace
 AAC Dry Ground Menhaden Fish
 AAC Fine Ground Bone
 AAC Ground Tankage
 AAC Muriate of Potash
 AAC Pulverized Sheep and Goat Manure
 AAC Sulphate of Ammonia
 AAC Sulphate of Potash
 Agrico for Corn 3-10-6
 Agrico for Lawns, Trees and Shrubs 7-6-6
 Agrico for New England 4-8-10
 Agrico for Pastures and Top Dressing 7-6-6
 Agrico for Potatoes and Vegetables 5-8-7
 Agrico for Tobacco 6-3-6
 Agrico for Truck 5-10-5

Apothecaries Hall Co., Waterbury, Conn.

Bone Meal 2.47-22.00%
 Bone Meal 3.70-21.00%
 Bone and Meat Tankage 3.70-21.00%
 Castor Pomace 4½%
 Cotton Hull Ashes
 (Sold on Unit Basis)
 Dry Ground Fish 9.46%-5.00%
 Liberty Corn 2-10-2
 Liberty Fish, Bone and Potash 3-10-4
 Liberty High Grade Corn 2-12-4
 Liberty High Grade Market Gardeners 5-8-7
 Liberty High Grade Tobacco Manure 6-3-7
 Liberty Market Gardeners Special 4-8-4
 Liberty Onion Special (Potash as Sulphate) 4-8-7
 Liberty Potato and General Crops 4-8-10
 Liberty Potato and Market Gardeners (Potash as Muriate) 4-8-7
 Liberty Potato and Vegetable 2-8-10
 Liberty Special Fertilizer for Fruit 7-8-6
 Liberty Special Fertilizer for Lawns, Gardens, etc. 4-4-0
 Liberty Tobacco Fertilizer 6-3-6
 Liberty Tobacco Mixture 7-3-7
 Liberty Tobacco Special 5-3-5

Liberty Top Dresser for Grass and Grain 8-8-8
 Muriate of Potash
 Nitrate of Potash 13-44%
 Precipitated Bone
 Sheep and Goat Manure 1.25-1-2.00%
 Sheep Manure 1.80-1.00-2.00%
 Sulphate Ammonia 20.56%
 Sulphate of Potash
 Super Phosphate 16%
 Tankage 7.40-9.00%

Armour Fertilizer Works, 120 Broadway, New York City

Armour's Big Crop Fertilizer 2-10-2
 Armour's Big Crop Fertilizer 3-12-6
 Armour's Big Crop Fertilizer 4-8-4
 Armour's Big Crop Fertilizer 4-8-7
 Armour's Big Crop Fertilizer 4-8-10
 Armour's Big Crop Fertilizer 4-16-4
 Armour's Big Crop Tobacco Special 5-3-5
 Armour's Big Crop Fertilizer 5-8-7
 Armour's Big Crop Fertilizer 7-6-6
 Armour's Big Crop Fertilizer 8-16-20
 Armour's Big Crop Superphosphate 16%
 Armour's Bone Meal Fertilizer
 Armour's Special Turf Fertilizer 10-8-6
 Armour's Vert Plant Food 5-8-6
 Muriate of Potash 50%
 Sheep and Goat Manure

Ashcraft-Wilkinson Co., Atlanta, Ga.
 Cow-Eta Brand 41% Cottonseed Meal

The Associated Chemical Co., Baltimore, Md.

Associated Sheep and Goat Manure
 Muriate of Potash
 Sulphate of Potash

Associated Seed Growers, Inc., 205 Church St., New Haven, Conn.

Acid Phosphate
 Clark's Special Mixture for General Use 4-8-4
 Clark's Standard 4-8-7
 Tip Top Brand, Clark's 5-8-7

Atkins & Durbrow, Inc., 165 John St., New York City

Andco Soil Builder 3-1-1
 Driconure

Baker Castor Oil Co. of Delaware, 120 Broadway, New York City
 Castor Pomace

Barrett Co., 40 Rector St., New York City

Arcadian the American Nitrate of Soda
 Arcadian Sulphate of Ammonia
 Sulphate of Ammonia

F. A. Bartlett Tree Expert Co., Stamford, Conn.

Bartlett Green Tree Food 6-7-4

The Berkshire Chemical Co., Bridgeport, Conn.

Berkshire 3-10-6 Fertilizer
 Berkshire Castor Pomace
 Berkshire Complete Fertilizer 2-12-2
 Berkshire Complete Tobacco Fertilizer 5-3-5
 Berkshire Cotton Hull Ashes
 Berkshire Double Strength Fertilizer 8-16-14
 Berkshire Dry Ground Menhaden Fish
 Berkshire Economical Grass Fertilizer 8-8-8
 Berkshire Fine Ground Bone
 Berkshire Golf Green Fertilizer 8-5-2
 Berkshire Grass Special Fertilizer 6-6-5
 Berkshire Ground Tankage
 Berkshire High Grade Tobacco Fertilizer 6-3-6
 Berkshire Japanese Sardine Fish Meal
 Berkshire Long Island Special Fertilizer 4-8-7
 Berkshire Market Garden Fertilizer 4-8-4
 Berkshire Muriate of Potash 50% K_2O
 Berkshire Potato and Garden Special Fertilizer 5-8-7
 Berkshire Superphosphate 16%
 Berkshire Truck Fertilizer 4-8-5
 Nitrate of Potash

C. E. Buell, Inc., 6 Beacon St., Boston, Mass.

Two-In-One Peat-Poultry Manure

Chilean Nitrate Sales Corp., 120 Broadway, New York City

Champion Brand Chilean Nitrate of Soda
 Chilean Nitrate of Soda containing Potash
 Standard Chilean Nitrate of Soda

Consolidated Cigar Corp., 730 Fifth Ave., New York City

The Cudahy Packing Co. Steamed Bone Meal

Consolidated Rendering Co., Boston, Mass.

Castor Pomace
Corenco 2-10-2 Bone Brand
Corenco 3-10-4 Animal Brand
Corenco 4-8-4 Corn and Vegetable
Corenco 4-8-7 Market Garden
Corenco 4-8-10 Potato Grower
Corenco 5-5-5 Lawn and Shrub Fertilizer
Corenco 5-8-7 General Crop Manure
Corenco 5-8-10 Peerless Potato
Corenco 5-10-5 Super Truck
Corenco 6-3-6 Special Tobacco Grower
Corenco 7-3-7 Super Tobacco Grower
Corenco 7-6-6 Complete Fruit and Top Dressing
Corenco 7-13-11 "It Cuts the Cost"
Corenco 8-16-14 Two In One
Corenco Ground Bone
Corenco Sheep Manure
Cottonseed Meal
Dry Ground Fish
Ground Tankage
Muriate of Potash
Pure Raw Bone
Sulphate of Ammonia
Sulphate of Potash
Superior Ground Tankage
Superphosphate 16%

Davey Tree Expert Co., Kent, Ohio

Davey Shredded Cattle Manure
Davey Tree Food 10-3-3

Davison Chemical Co., Baltimore, Md.

Davison Superphosphate 16%

Eastern States Farmers' Exchange, Springfield, Mass.

Eastern States 0-14-6
Eastern States 4-8-8
Eastern States 4-12-4
Eastern States 4-16-20
Eastern States 5-5-15 Tobacco
Eastern States 6-8-6
Eastern States 8-4-8 Tobacco
Eastern States 8-12-20
Eastern States 8-16-16
Eastern States 8-16-16 (Low Chlorine Special)
Eastern States 8-20-12
Eastern States 8-24-8
Eastern States 10-5-10 Tobacco
Eastern States 12-4-4
Eastern States 12-16-12
Eastern States Cottonseed Meal-Castor Pomace Mixture
Eastern States Dry Ground Fish
Eastern States Ground Steamed Bone
Eastern States Muriate of Potash

Eastern States Nitrate of Potash
Eastern States Precipitated Bone
Eastern States Sulphate of Ammonia
Eastern States Sulphate of Potash
Eastern States Sulphate of Potash-Magnesia
Eastern States 16% Superphosphate
Eastern States 32% Double Superphosphate
Eastern States 20% Superphosphate
Eastern States 40% Double Superphosphate
Urea

Ed. Eggert, Hartford, Conn.

Diamond "EE" Cotton Hull Ashes

Ford Motor Co., Dearborn, Michigan

Ford Ammonium Sulphate

Goulard & Olen, Inc., 140 Liberty St., New York City

G & O Lawn-Garden and Flower Fertilizer 5-8-5
J. B. Greens Formula 10-4-3

Paul M. Hubbard & Co., Bristol, Conn.

Hubbard's Special Lawn Food 10-6-4

Humphreys-Godwin Co., Memphis, Tenn.

Bull Brand 43% Protein Primé
Cottonseed Meal
Dixie Brand 41% Protein Prime
Cottonseed Meal

International Agricultural Corp., 38 Chauncy St., Boston, Mass.

Chilean Nitrate of Potash and Soda
International 3-10-4
International 4-8-4
International 4-8-10
International 5-8-7
International 7-6-6
International 8-16-14
International Basic Slag
International Caribee Market Garden 5-10-10
International 16% Superphosphate

Spencer Kellogg & Sons, Inc., Buffalo, N. Y.

Castor Pomace

Millane Nurseries & Tree Experts Co., Cromwell, Conn.

Millane Shade Tree Food 8-8-4

Miller Fertilizer Co., Baltimore, Md.

Miller Harvest Brand 4-8-4
 Miller Harvest Brand 4-8-10
 Miller Harvest Brand 5-3-5
 Miller Harvest Brand 5-8-7
 Miller Harvest Brand 7-6-6
 Miller Harvest Brand 8-16-14

**Milwaukee Sewerage Commission,
Milwaukee, Wisconsin**

Milorganite

Natural Guano Co., Aurora, Ill.

"Sheep's Head" Pulverized Sheep
 Manure

**New Orleans Export Co., Ltd., New
Orleans, La.**

Prime Cotton Seed Meal—41% Protein

**Old Deerfield Fertilizer Co., Inc.,
South Deerfield, Mass.**

Cotton Hull Ashes
 Dry Ground Fish
 Old Deerfield Complete Tobacco 5-3-5
 Old Deerfield Complete Tobacco 6-3-7
 Old Deerfield Tobacco Starter 5-8-12
 Special Formula Valley 5-10-5
 Valley Brand 4-8-4
 Valley Brand 5-8-7

Olds & Whipple, Inc., Hartford, Conn.

Cottonseed Meal—Castor Pomace
 Mixture O&W
 Linseed Meal 32% Protein
 Luxura 5-8-6
 Nutmeg Brand Prime Cotton Seed
 Meal O&W
 O&W Blue Label Tobacco Fertilizer
 6-3-5 (Potash derived from CHA)
 O&W Blue Label Tobacco Fertilizer
 6-3-6
 O&W Bone Meal
 O&W Castor Pomace
 O&W Complete Tobacco Fertilizer
 5-3-5
 O&W Corn Special Fertilizer 3-10-4
 O&W Cotton Hull Ashes
 O&W Dry Ground Fish
 O&W Ground Tankage
 O&W High Grade Potato and Vege-
 table Fertilizer 5-8-7
 O&W High Grade Tobacco Starter
 and Potash Compound 5-4-15
 O&W Market Garden Fertilizer 4-8-4
 O&W Nitrate of Potash
 O&W Potato and General Purpose
 Fertilizer 4-8-7
 O&W Precipitated Bone Phos.
 O&W Sulphate of Ammonia

O&W Superphosphate

O&W Top Dressing and Grass Fertil-
 izer 8-6-6
 Sulphate of Potash
 Valley Brand Prime Cotton Seed
 Meal O&W
 Wilcox Corn Special Fertilizer 3-10-4
 Wilcox Market Garden Fertilizer 4-8-4
 Wilcox Potato and General Purpose
 Fertilizer 4-8-7
 Wilcox Top Dresser Fertilizer 8-6-6

**Outpost Nurseries, Inc., Ridgefield,
Conn.**

Outpost Plant Food 8-5-2

**Pacific Manure & Fertilizer Co., 108-
110 Davis St., San Francisco, Cal.**

Groz-It Brand Pulverized Sheep
 Manure

**Plantspur Products Co., Inc., Ridge-
field, N. J.**

Plantspur Fertilizer 3-3-2

**The Frank S. Platt Co., New Haven,
Conn.**

Platco Special 5-8-7
 Platt's Special Lawn Fertilizer 10-5-5

**Premier Poultry Manure Co., 327 South
LaSalle St., Chicago, Ill.**

Premier Brand Pulverized Poultry
 Manure

**Pulverized Manure Co., 431 West
39th St., Chicago, Ill.**

Wizard Brand Cow Manure
 Wizard Brand Pulverized Sheep
 Manure

**The Rogers & Hubbard Co., Portland,
Conn.**

3 x 50 Bone
 Golf Course Fertilizer 8-6-2
 Gro-Fast 5-6-6
 Hubbard's All Soils All Crops Fertil-
 izer 4-8-4
 Hubbard's "Bone Base" Fertilizer for
 Seeding Down
 Hubbard's "Bone Base" Oats and Top
 Dressing
 Hubbard's "Bone Base" Soluble Corn
 and Market Garden Manure
 Hubbard's "Bone Base" Soluble Potato
 and Tobacco Manure
 Hubbard's Climax Tobacco Brand 5-3-5
 Hubbard's Corn and Grain Fertilizer
 2-12-4

- Hubbard's High Potash Fertilizer 2-8-10
 Hubbard's Potato Fertilizer 5-8-7
 Hubbard's Tobacco Grower—Vegetable Formula 6-3-6
 Pulverized Sheep and Goat Manure
 Pure Raw Bone
 Red H General Cropper 4-8-4
 Red H Grass Cropper 7-6-6
 Red H Hi-Grade Cropper 8-16-14
 Red H Potato Cropper 5-8-7
 Red H Truckers' Special Cropper 4-8-7
 Strictly Pure Fine Bone Superphosphate
- F. Rynveld & Sons, 149 West 24th St., New York City
 Rynveld's Bone Meal Fertilizer
- O. M. Scott & Sons Co., Marysville, Ohio
 Scott's 10-6-4 Turf Builder
- M. L. Shoemaker & Co., Inc., 3600 N. Del. Ave., Philadelphia, Pa.
 Shoemaker's "Swift-Sure" Tobacco Starter 4-10-0
- Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.
 Pinkerton Bell Brand 7-12-12
 Standard United States 4-8-4
 Standard United States 5-8-7
 Standard United States Superphosphate
- Stumpp & Walter Co., New York City
 Sawco Bone Fertilizer
 Sawco Emerald Grass Fertilizer 5-6-2
 Sawco General Garden Fertilizer 5-8-5
 Sawconite 6-0-0
 Sawconure
- Summers Fertilizer Co., Inc., Baltimore, Md.
 2-10-2 Fertilizer
 4-8-4 Fertilizer
 4-8-7 Fertilizer
 5-8-7 Fertilizer
 8-6-6 Fertilizer
 Ground Bone Meal
 Ground Raw Bone Meal
 Summers' Genuine Venezuelan Goat Manure
 Summers' Sheep Manure
 16% Superphosphate
- Sutton & Sons, Ltd., Reading, England
 Sutton's Simplex Fertilizer 5-9-2
- Swift & Co., Fertilizer Works, Baltimore, Md.
 Bone Meal Fertilizer
 Swift's Special Golf Fertilizer 12-6-4
 Vigoro 4-12-4
- Synthetic Nitrogen Products Corp., 285 Madison Ave., New York City
 Calcium Nitrate (Nitrate of Lime)
 Nitrophoska 15-30-15
 Urea
- Tennessee Corp., Lockland, Ohio
 Loma 5-10-4
 Soil-Prep 4-2-2
- I. P. Thomas & Son Co., Philadelphia, Pa.
 Fish and Potash Brand 5-8-5
 High Grade Potato 4-8-10
 I. P. Thomas 4-8-7
 I. P. Thomas 5-8-7
 Muriate of Potash 48% K_2O
 Pure Ground Bone 2.45% Nit.
 23% T.P.A.
 Sulphate of Potash 48% K_2O
 16% Superphosphate
 Tip Top Fertilizer 3-10-6
 Truckers' High Grade Guano 4-8-4
- Truempy, Faesy & Besthoff, Inc., 22 E. 40th St., New York City
 Bone Meal
- Virginia-Carolina Chemical Corp., Richmond, Va.
 Bloomaid (New Process) 4-10-3
 V-C Fairway Fertilizer (New Process) 6-6-4
- Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.
 Bovung
- Thomas Wood & Sons, Inc., 12-14 Midland Ave., Montclair, N. J.
 Woodgro Pure Cow Manure
 Dehydrated
- F. H. Woodruff & Sons, Milford, Conn.
 Woodco Lawn Food 10-6-4

INSPECTION OF 1935

The Station Agent has visited 78 towns and villages in the State and has drawn 370 official samples of fertilizer, including all the registered brands that could be found. The classification of these and of other samples is given in the summary.

CLASSIFICATION OF FERTILIZER MATERIALS, 1935

	Number of samples	Page
I. <i>Containing Chiefly Nitrogen</i>		
Nitrate of Soda	6	17
Calcium nitrate	2	18
Urea	3	18
Cyanamid	3	17
Ammonium sulfate	10	18
Castor pomace	12	17
Cottonseed meal	90	17
Cottonseed meal—Castor pomace mixture	3	17
Linseed meal	8	19
II. <i>Containing Chiefly Phosphoric Acid</i>		
Superphosphate	16	20
Precipitated bone	5	20
Basic slag	1	20
III. <i>Containing Chiefly Potash</i>		
Muriate of potash	9	23
Sulfate of potash	10	23
Cottonhull ashes	46	23
Wood ashes	2	23
IV. <i>Containing Nitrogen and Potash</i>		
Nitrate of potash	12	25
Nitrate of potash and soda	4	25
V. <i>Containing Nitrogen and Phosphoric Acid</i>		
Dry ground fish	29	27
Tankage	10	27
Ground bone	29	27
VI. <i>Mixed Fertilizers</i>		
Commercial mixtures	226	32
Special and home mixtures	17	33
VII. <i>Miscellaneous</i>		
Sheep manure	21	53
Lime	10	53
Other miscellaneous	39	53
Check meals and fertilizers	42	53
Total	665	

I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN

NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Analyses of official samples of these materials are given in Table 1.

Guaranties were met or exceeded in all cases except No. 9077, nitrate of soda, and No. 8732, cyanamid, in which our results showed deficiencies of about 0.5 per cent in each instance.

VEGETABLE PRODUCTS USED AS SOURCES OF NITROGEN

Cottonseed meal and castor pomace are used to a considerable extent in fertilizer mixtures as sources of organic nitrogen. To a lesser extent linseed meal is used for the same purpose, and this year cottonseed meal mixed with castor pomace has been on the market.

Cottonseed meal is commonly used for feeding animals, but castor pomace is not suitable for that purpose because it is poisonous to stock. The fertilizer mixtures of these two materials do not contain enough pomace to give them a general appearance different from straight cottonseed meal. The Station has therefore advised packers and distributors that such mixtures must be plainly tagged with the names of both ingredients, and labeled "not suitable for feeding purposes".

Analyses of official samples of cottonseed meal and other vegetable sources of organic nitrogen are given in Table 2. No deficiencies were found.

Samples submitted by purchasers have been examined, but these are not included in the tabulations.

TABLE 1. ANALYSES OF NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Nitrate of Soda				
8667	Arcadian, the American Barrett Co., New York City	Cheshire Reformatory, West Cheshire	16.10	16.00
9086	Arcadian, the American Barrett Co., New York City	Associated Seed Growers, Milford	16.42	16.00
8007	Champion Brand Chilean. Chilean Nitrate Sales Corp., New York City	H. D. Peters, Hamden	16.16	16.00
9077	Champion Brand Chilean. Chilean Nitrate Sales Corp., New York City	Hamden Grain Co., Mt. Carmel	15.52	16.00
Calcium Nitrate (Nitrate of Lime)				
8821	Synthetic Nitrogen Products Corp., New York City	Olds & Whipple, Inc., Hartford	15.30	15.00
Urea				
8746	Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Farmers' Exchange, East Hartford ..	46.00	46.00
8662	Eastern States Farmers' Exchange, Springfield, Mass.	John M. Herr, East Hartford	46.10	46.00
9214	Synthetic Nitrogen Products Corp., New York City	Cadwell & Jones, Hartford	46.10	46.00
Cyanamid				
8732	Aero. American Cyanamid Co., New York City	Knowles & Lombard Co., Guilford	21.50	22.00
Sulphate of Ammonia				
9084	AAC. American Agricultural Chemical Co., West Haven, Conn.	Factory, West Haven	20.80	20.56
8698	AAC. American Agricultural Chemical Co., West Haven, Conn.	S. P. Strople, New Britain..	20.92	20.56
8009	Apothecaries Hall Co., Waterbury, Conn.	H. D. Peters, Hamden	21.00	20.56
8719	Arcadian. Barrett Co., New York City	L. T. Frisbie Co., New Haven	21.00	20.56
8727	Barrett Co., New York City	Berkshire Chemical Co., Bridgeport	20.96	20.56
8717	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	21.00	20.50
8675	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	J. B. Lewis, Southington ..	20.92	20.50
8748	Ford. Ford Motor Co., Dearborn, Mich.	O'Meara Motor Co., East Hartford	21.00	20.80
8801	O&W. Olds & Whipple, Inc., Hartford, Conn.	Factory, East Hartford	21.00	20.50

TABLE 2. ANALYSES OF CASTOR POMACE, COTTONSEED MEAL, ETC.

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Castor Pomace				
8723	AAC. American Agricultural Chemical Co., West Haven, Conn.	Factory, West Haven	4.86	4.50
8736	AAC. American Agricultural Chemical Co., West Haven, Conn.	Spencer Bros., Suffield	5.06	4.50
8740	Apothecaries Hall Co., Waterbury, Conn.	Factory, East Windsor	5.12	4.52
8663	Baker Castor Oil Co., New York City	John M. Herr, East Hartford	5.66	4.50
8702	Berkshire. Berkshire Chemical Co., Bridgeport, Conn.	J. A. Smith & Son, Hamden	4.92	4.50
9054	Berkshire. Berkshire Chemical Co., Bridgeport, Conn.	T. W. Ryan, Stratford	4.88	4.50
8805	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	4.93	4.52
8798	O&W. Olds & Whipple, Inc., Hartford, Conn.	Factory, East Hartford	5.19	4.50
9216	O&W. Olds & Whipple, Inc., Hartford, Conn.	E. J. Bantle, Glastonbury ..	5.09	4.50
Cottonseed Meal				
8741	Cow-Eta Brand. Ashcraft-Wilkinson Co., Atlanta, Ga.	Apothecaries Hall Co., East Windsor	6.62	6.58
8718	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	7.28	6.50
9218	Dixie Brand 41% Protein. Humphreys-Godwin Co., Memphis, Tenn.	Apothecaries Hall Co., East Windsor	6.85	6.58
9205	Valley Brand Prime O&W. Olds & Whipple, Inc., Hartford, Conn.	Francis O'Neil, East Hartford	6.70	6.58
Linseed Meal				
8659	32% Protein. Olds & Whipple, Inc., Hartford, Conn...	John M. Herr, East Hartford	5.19	5.12
Cottonseed Meal—Castor Pomace Mixture				
9188	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	B. F. Pinney & Son, Ellington	5.95	5.75
9217	O&W. Olds & Whipple, Inc., Hartford, Conn.	Factory, East Hartford	5.87	5.75

II. RAW MATERIALS CHIEFLY VALUABLE FOR PHOSPHORIC ACID

SUPERPHOSPHATE

This raw material is one of basic importance in the fertilizer industry. It is made in this country by treating phosphate rock with sulphuric acid. The finished product contains 16 per cent of available phosphoric acid and a considerable amount of calcium sulphate (gypsum). If the gypsum is largely or entirely removed, the percentage of available phosphoric acid is correspondingly higher. Thus there are so-called "double" and "triple" superphosphates on the market which are products of the process just described. They contain from 40 to 50 per cent of available phosphoric acid.

The official (A.O.A.C.) definition of superphosphate is "the cured product obtained by mixing rock phosphate with sulphuric or phosphoric acid or with both". The grade should always be designated, as, for example, "16 per cent superphosphate", "32 per cent superphosphate", etc.

Sixteen official samples of superphosphates have been examined and all satisfied their guaranties. One of these was of the "double" superphosphate grade and was guaranteed to contain 32 per cent available phosphoric acid.

Precipitated bone phosphate, generally called "precipitated bone", is a by-product obtained in the manufacture of glue from bones. It contains about 40 per cent of "available" phosphoric acid. Three official samples were examined. They were guaranteed 38 per cent available phosphoric acid, and all substantially met or exceeded that claim.

Basic slag is a by-product obtained in the manufacture of steel from phosphatic iron ores. The one sample of this type of material examined exceeded the minimum standard set by the A.O.A.C., but was 0.21 per cent short of its registered guaranty of 14.4 per cent.

Analyses of official samples of this group of materials are given in Table 3.

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	"Available"	
					Found	Guaranteed
			%	%	%	%
Superphosphate						
8699	Acme. Acme Guano Co., Baltimore, Md...	Rackliffe Bros. Co., New Britain	0.52	17.19	16.67	16.00
8670	AA 16%. American Agricultural Chemical Co., West Haven, Conn.	Cheshire Grain & Coal Co., West Cheshire	0.45	17.05	16.60	16.00
8665	16%. Apothecaries Hall Co., Waterbury, Conn.	Hamden Grain Co., Mt. Carmel	0.41	17.01	16.60	16.00
9041	Armour's Big Crop 16%. Armour Fertilizer Works, New York City	Taken from dock at Hartford	0.70	17.23	16.53	16.00
9134	Associated Seed Growers, Inc., New Haven, Conn.	Associated Seed Growers, Inc., Milford..	0.24	16.60	16.36	16.00
8730	Berkshire 16%. Berkshire Chemical Co., Bridgeport, Conn.	Silliman Hardware Co., New Canaan ...	0.70	17.41	16.71	16.00
8666	16%. Consolidated Rendering Co., Boston, Mass.	Cheshire Reformatory, West Cheshire ...	0.35	17.48	17.13	16.00
8744	Davison 16%. Davison Chemical Co., Baltimore, Md.	Rockville Grain & Coal Co., Rockville ..	0.76	17.94	17.18	16.00
8673	Eastern States 16%. Eastern States Farmers' Exchange, Springfield, Mass.	J. B. Lewis, Southington	0.65	17.22	16.57	16.00
9132	Eastern States 32% Double. Eastern States Farmers' Exchange, Springfield, Mass. ...	Augur & Augur, Northford	0.45	35.70	35.25	32.00

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.—(Concluded)

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	"Available"	
					Found	Guaranteed
			%	%	%	%
Superphosphate—Concluded						
8806	International 16%. International Agricultural Corp., Boston, Mass.	Sunshine Feed Store, Montville	0.79	17.31	16.52	16.00
8735	O&W. Olds & Whipple, Inc., Hartford, Conn.	Bloomfield Farmers' Exchange, Bloomfield	0.65	17.91	17.26	16.00
8700	The Rogers & Hubbard Co., Portland, Conn.	Factory, Portland	0.23	17.23	17.00	16.00
8818	Standard United States 16%. Standard Wholesale Phosphate & Acid Works, Baltimore, Md.	H. H. McKnight, Ellington	0.83	16.91	16.08	16.00
8703	16%. Summers Fertilizer Co., Inc., Baltimore, Md.	Seymour Grain & Coal Co., Seymour ...	4.44	21.13	16.69	16.00
8003	16%. I. P. Thomas & Son Co., Philadelphia, Pa.	H. D. Peters, Hamden	1.05	17.91	16.86	16.00
Precipitated Bone						
9312	Apothecaries Hall Co., Waterbury, Conn.	Factory, East Windsor	2.99	44.86	41.87	38.00
8819	Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	0.60	42.40	41.80	38.00
8661	O&W. Olds & Whipple, Inc., Hartford, Conn.	John M. Herr, East Hartford	1.40	39.27	37.87	38.00
Basic Slag						
9200	International. International Agricultural Corp., Boston, Mass.	Irving W. Foote, Norwich	18.55	14.19	14.40

III. RAW MATERIALS CHIEFLY VALUABLE FOR POTASH

POTASH SALTS

Seven official samples of muriate of potash and six of sulphate of potash were examined. One sample of muriate was found to be 0.76 per cent under the guaranty, and one sample of sulphate showed the slight deficiency of 0.24 per cent.

COTTONHULL ASHES

The ashes of cottonhulls are largely used for fertilizer purposes as sources of potash. Their composition is so variable that is difficult to fix guaranties, and hence sales are made on the unit basis depending on the analysis. For this reason the Station has made a considerable number of analyses for purchasers.

WOOD ASHES

No official samples of wood ashes have been taken but two samples submitted by purchasers have been examined. We were informed that these ashes had been exposed to the weather for some time, and the analyses showed that a large proportion (nearly all in one case) of the potash had been leached out. Potash found was 2.38 per cent in one sample and 0.11 per cent in the other.

Analyses of official samples of materials in this group are given in Table 4.

TABLE 4. ANALYSES OF POTASH SALTS, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Potash	
			Found	Guaranteed
	Muriate of Potash		%	%
8733	Acme. Acme Guano Co., Baltimore, Md.	P. Levson & Son, Middletown	47.24	48.00
8721	AAC. American Agricultural Chemical Co., West Haven, Conn.	Factory, West Haven	50.08	50.00
9314	Apothecaries Hall Co., Wa- terbury, Conn.	Factory, East Windsor	50.19	50.00
9053	Berkshire Chemical Co., Bridgeport, Conn.	T. W. Ryan, Stratford	51.54	50.00
8668	Consolidated Rendering Co., Boston, Mass.	Cheshire Reformatory, West Cheshire	50.38	50.00
8674	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	J. B. Lewis, Southington...	61.04	60.00
8006	I. P. Thomas & Son Co., Philadelphia, Pa.	H. D. Peters, Hamden	50.62	48.00
	Sulphate of Potash			
8720	AAC. American Agricultural Chemical Co., West Haven, Conn.	Factory, West Haven	48.99	48.00
9313	Apothecaries Hall Co., Wa- terbury, Conn.	Factory, East Windsor	49.09	48.00
8714	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	47.76	48.00
8745	Eastern States Farmers' Ex- change, Springfield, Mass..	Eastern States Farmers' Exchange, East Hartford	49.60	48.00
8658	Olds & Whipple, Inc., Hart- ford, Conn.	John M. Herr, East Hartford	49.96	48.00
8008	I. P. Thomas & Son Co., Philadelphia, Pa.	H. D. Peters, Hamden	49.78	48.00
	Cottonhull Ashes			
8808	Apothecaries Hall Co., Wa- terbury, Conn.	Factory, East Windsor	34.72 ¹
9069	Berkshire Chemical Co., Bridgeport, Conn.	Factory, Bridgeport	25.74	25.00
8820	Diamond "EE". Ed. Eggert, Hartford, Conn.	Spencer Bros., Suffield	20.51 ^{1, 2}
8657	Olds & Whipple, Inc., Hart- ford, Conn.	John M. Herr, East Hartford	29.45	30.00

¹Sold on unit basis.²Moisture 18.10%.

IV. RAW MATERIALS SUPPLYING NITROGEN AND POTASH

Four official samples of nitrate of potash and two of nitrate of potash-soda were examined and the results are given in Table 5.

Sample 9070 showed a deficiency in both nitrogen and potash. The local distributor, Berkshire Chemical Co., and the importer, F. W. Berk and Co., New York City, were at a loss to understand the shortage.

Four samples submitted to us by purchasers, and representing the same stock, were found to meet the guaranty of 13 per cent nitrogen and 44 per cent potash. A portion of our sample, 9070, was sent to the importer to be checked by the exporter in Germany who reported 13.2 per cent nitrogen and 43.66 per cent potash. The methods used by the German chemists differed from the official methods used by this Station and this furnished at least a partial explanation of the discrepancy.

Difference in moisture content was not a factor because the sample contained only 0.26 per cent of moisture. It may be noted that the water-insoluble material in this particular sample was 3.54 per cent, while the water-insoluble in the four samples submitted by purchasers ranged from 0.8 per cent to 2.3 per cent. If sample 9070 had contained no more insoluble than the maximum found in the previous samples, it would still have met the guaranty. In passing, it should be noted that the exporter's figure for potash (43.66 per cent), in the sample that we submitted, does not equal the guaranteed 44 per cent.

This explanation is given in fairness to the local distributor and to the importers who have spared no pains to investigate the deficiency.

TABLE 5. ANALYSES OF NITRATE OF POTASH, ETC.

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Potash	
			Found	Guaranteed	Found	Guaranteed
			%	%	%	%
8738	Nitrate of Potash		13.16	13.00	44.59	44.00
9070	Apothecaries Hall Co., Waterbury, Conn...	Factory, East Windsor	12.74	13.00	42.96	44.00
8742	Berkshire Chemical Co., Bridgeport, Conn.	Factory, Bridgeport	13.08	13.00	45.00	44.00
	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	13.14	13.00	44.64	44.00
8800	O&W. Olds & Whipple, Inc., Hartford, Conn.	Factory, East Hartford				
8807	Nitrate of Potash-Soda		14.50	14.00	15.41	14.00
8045	International Agricultural Corp., Boston, Mass.	Sunshine Feed Store, Montville	14.67	14.00	14.33	13.00
	Chilean Nitrate Sales Corp., New York City	John A. Martin, Wallingford				

V. RAW MATERIALS SUPPLYING NITROGEN
AND PHOSPHORIC ACID

FISH, TANKAGE AND BONE

Eight official samples of dry ground fish were examined and all met guaranties except 8660, which showed a slight deficiency in nitrogen. No evidence of adulteration with mineral forms of nitrogen was found.

Analyses are given in Table 6.

The official samples of tankage, seven in number, showed no deficiencies. Two were bone and meat tankage and were so designated.

Analyses are given in Table 7.

Twenty official samples of ground bone were examined and guaranties were met with two exceptions, 7686 and 8669, in which deficiencies in phosphoric acid were found. Microscopic examination revealed no evidence of adulteration.

Analyses are given in Table 8.

TABLE 6. ANALYSES OF DRY GROUND FISH

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Nitrogen		Phosphoric acid	
			Total found	Total guaranteed	Total found	Total guaranteed
9215	AAC Menhaden. American Agricultural Chemical Co., West Haven, Conn.	E. J. Bantle, Glastonbury	% 10.22	% 9.46	% 7.23	% 5.00
8739	Apothecaries Hall Co., Waterbury, Conn...	Factory, East Windsor	9.96	9.46	7.20	5.00
8726	Berkshire Menhaden. Berkshire Chemical Co., Bridgeport, Conn.	Factory, Bridgeport	10.08	9.46	6.79	5.00
9055	Berkshire Japanese Sardine Fish Meal. Berkshire Chemical Co., Bridgeport, Conn.	T. W. Ryan, Stratford	9.13	9.00	5.76	4.00
8715	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	10.00	9.46	8.41	6.00
8672	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	J. B. Lewis, Southington	10.02	9.00	5.93	5.00
8799	O&W. Olds & Whipple, Inc., Hartford, Conn.	Factory, East Hartford	10.06	9.00	7.19	5.00
8660	O&W. Olds & Whipple, Inc., Hartford, Conn.	John M. Herr, East Hartford	8.77	9.00	5.98	5.00

TABLE 7. ANALYSES OF TANKAGE AND SIMILAR MATERIALS

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
8722	AAC Ground. American Agricultural Chemical Co., West Haven, Conn.	Factory, West Haven	7.77	7.40	10.65	9.15	53.1	46.9	8722
8695	Bone and Meat. Apothecaries Hall Co., Waterbury, Conn.	R. W. Hine, Cheshire	3.82	3.70	23.39	21.00	50.5	49.5	8695
8356	Bone and Meat. Apothecaries Hall Co., Waterbury, Conn.	J. H. Whittemore Co., Naugatuck	3.77	3.70	23.70	21.00	51.7	48.3	8356
8729	Berkshire Ground. Berkshire Chemical Co., Bridgeport, Conn.	Silliman Hardware Co., New Canaan	9.99	9.80	8.32	6.00	33.6	66.4	8729
9088	Berkshire Ground. Berkshire Chemical Co., Bridgeport, Conn.	Factory, Bridgeport	9.99	9.80	8.62	6.00	38.3	61.7	9088
8713	Ground. Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	8.75	7.41	10.29	9.15	41.0	59.0	8713
8737	Superior Ground. Consolidated Rendering Co., Boston, Mass.	Brainard Nursery, Thompsonville	8.48	8.22	10.29	10.00	46.0	54.0	8737

TABLE 8. ANALYSES OF GROUND BONE

Station No.	Manufacturer and brand	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
8696	AAC Fine Ground. American Agricultural Chemical Co., West Haven, Conn.	Meriden Grain & Coal Co., Meriden	% 3.54	% 2.47	% 23.42	% 23.00	% 75.4	% 24.6	8696
8357	Apothecaries Hall Co., Waterbury, Conn...	J. H. Whittemore & Co., Naugatuck	4.12	2.47	21.89	22.00	59.3	40.7	8357
8706	Apothecaries Hall Co., Waterbury, Conn...	C. A. Templeton, Inc., Waterbury	4.12	3.70	22.56	21.00	54.5	45.5	8706
9079	Apothecaries Hall Co., Waterbury, Conn...	R. W. Hine, Cheshire	3.93	2.47	23.49	22.00	56.0	44.0	9079
9065	Armour's. Armour Fertilizer Works, New York City	Taken from dock at Hartford	3.11	2.47	24.61	23.00	56.4	43.6	9065
8725	Berkshire Fine Ground. Berkshire Chemical Co., Bridgeport, Conn.	Associated Seed Growers, Inc., Milford	2.34	2.05	29.21	25.00	64.4	35.6	8725
7686	The Cudahy Packing Co. Steamed. Consolidated Cigar Corp., New York City ...	Consolidated Cigar Corp., Portland	3.22	2.88	24.73	26.05	58.7	41.3	7686
8669	Corenco Ground. Consolidated Rendering Co., Boston, Mass.	Cheshire Reformatory, West Cheshire	3.75	2.47	21.55	23.00	36.0	64.0	8669
8716	Pure Raw Bone. Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	4.01	3.70	24.09	20.00	37.8	62.2	8716
8747	Eastern States Ground Steamed. Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Farmers' Exchange, East Hartford .	2.84	2.50	25.39	23.00	66.4	33.6	8747

TABLE 8. ANALYSES OF GROUND BONE—(Concluded)

Station No.	Manufacturer and brand	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-60 inch	Coarser than 1-60 inch	
8701	O&W. Olds & Whipple, Inc., Hartford, Conn.	F. T. Blish Hardware Co., South Manchester	% 3.74	% 2.47	% 23.08	% 22.00	% 59.0	% 41.0	8701
8676	3 x 50 Bone. The Rogers & Hubbard Co., Portland, Conn.	Raven Hardware Co., Meriden	3.00	2.47	26.63	22.85	50.5	49.5	8676
8802	Pure Raw Bone. The Rogers & Hubbard Co., Portland, Conn.	Factory, Portland	3.86	3.69	26.59	24.70	88.4	11.6	8802
8731	Strictly Pure Fine. The Rogers & Hubbard Co., Portland, Conn.	W. L. Richmond, New Milford	4.41	3.70	23.31	21.50	40.4	59.6	8731
8803	Sawco Bone Fertilizer. Stumpp & Walter Co., New York City	Stumpp & Walter Co., Stamford	2.42	2.40	27.41	24.00	48.2	51.8	8803
8705	Ground Raw. Summers Fertilizer Co., Inc., Baltimore, Md.	Seymour Grain & Coal Co., Seymour	4.24	3.70	23.40	21.51	52.2	47.8	8705
8704	Ground. Summers Fertilizer Co., Inc., Baltimore, Md.	Seymour Grain & Coal Co., Seymour	2.78	2.40	24.60	22.88	70.6	29.4	8704
8697	Swift & Co., Fertz. Wks., Baltimore, Md.	S. P. Stroppe, New Britain ..	2.56	2.47	26.13	22.00	68.8	31.2	8697
8004	Pure Ground. I. P. Thomas & Son Co., Philadelphia, Pa.	H. D. Peters, Hamden	2.58	2.45	25.41	23.00	57.4	42.6	8004
8728	Truempy, Faesy & Besthoff, Inc., New York City	Clapboard Hill Co., New Canaan	2.46	2.25	29.28	27.00	61.9	38.1	8728

VI. MIXED FERTILIZERS

In this group are 215 official samples. One of them supplies only nitrogen; three supply only nitrogen and phosphoric acid; and one supplies only phosphoric acid and potash.

Analyses are given in Table 9. A summary of this table is as follows:

Total number of samples	215
Samples deficient in:	
one item	36
two items	8
three items	3
percentage of samples meeting guaranties in all respects....	78
Total guaranties made	639
Guaranties not met:	
nitrogen	32
phosphoric acid	12
potash	17
Percentage of guaranties met	90
Samples showing commercial deficiencies exceeding \$1.00	
per ton	4
Percentage of commercial deficiencies	1.9

The performance of manufacturers in producing fertilizer mixtures that substantially meet the guaranties of plant food under which they are sold has improved greatly in recent years. This feature is clearly shown by the following tabulation based upon records of official inspections in past years.

Year	Total number of samples	Substantially meeting guaranties in N, P ₂ O ₅ and K ₂ O	Showing commercial deficiencies of \$1.00 or more per ton
		%	%
1923	261	55	17
1924	282	60	7
1925	255	67	13
1926	247	66	11
1927	243	68	7
1928	250	71	13
1929	239	72	9
1930	236	80	3
1931	235	74	3
1932	222	76	3
1933	199	76	3
1934	176	79	2.3
1935	215	78	1.9

In the early part of the period covered in the tabulation, it appears that the proportion of samples found to satisfy guaranties was between 50 and 70 per cent; and that commercial deficiencies exceeding \$1.00 per ton ranged from 10 to nearly 20 per cent of the total examined. In the latter part, the corresponding figures for guaranties met are between 70 and 80 per cent; and the commercial deficiencies are less than 5 per cent.

During the past season samples showing commercial deficiencies in excess of \$1.00 per ton were as follows:

Acme Guano Co. 8-16-14, two samples, Nos. 9133 and 9452
Eastern States Farmers' Exchange 12-16-12, No. 9120 (Duplicate
sample of same brand, No. 8996, not deficient).
Standard Wholesale Phosphate and Acid Works 7-12-12, No. 9198

A summary of chemical deficiencies is given in Table 10. In view of a proposed change in the official method for potash, samples found deficient in this item have been given the benefit of a check determination by the proposed method if that figure was higher than the one found by the old official method. The proposed revised method is not official as final action upon it has not yet been taken by the Association of Official Agricultural Chemists. By the regular method, 26 deficiencies in potash were found exceeding 0.2 per cent, but by the modified procedure the number was reduced to 17.

QUALITY OF THE INSOLUBLE ORGANIC NITROGEN

When the insoluble organic nitrogen in mixed goods is found to have an "activity" value of less than 50 per cent by the alkaline permanganate method, and less than 80 per cent by the neutral permanganate method, the quality of the organic nitrogen is regarded as inferior. Values less than these have been found in 12 samples this year, but in all cases the actual water-soluble nitrogen found, plus the active insoluble, has substantially equalled or exceeded the guaranty and the samples have been passed.

SPECIAL AND HOME MIXTURES

Analyses of 17 samples of special and home mixtures have been made and the results will be found in Table 11.

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Acme Guano Co., Baltimore, Md.	
8860	Acme 4-8-4	New Britain.....
8861	Acme 5-8-7	New Britain.....
8859	Acme 7-6-6	New Britain.....
9133	Acme 8-16-14	Middletown.....
9452	Acme 8-16-14	Middletown.....
	American Agricultural Chemical Co., West Haven, Conn.	
9131	AA Double Strength Fertilizer 8-16-14	Factory.....
8854	AA General Crop Fertilizer 2-10-2	Meriden.....
8853	AA Monarch Fertilizer 4-8-4	Meriden.....
8980	AA Peerless Fertilizer 4-8-7	Suffield.....
8817	AA Potato and Vegetable Fertilizer 5-8-7	Cheshire.....
9074	AA Prolific 10% Potash 2-8-10	Torrington.....
8982	AA Tobacco Starter 5-5-15	Suffield.....
8856	AA Top Dresser 7-6-6	New Britain.....
9118	AA Top Dresser 7-6-6	Bristol.....
8979	AA XL Fertilizer 3-10-4	Suffield.....
8851	Agrico for Corn 3-10-6	Meriden.....
9111	Agrico for Corn 3-10-6	New Canaan.....
8826	Agrico for Lawns, Trees and Shrubs 7-6-6 ...	West Cheshire.....
8857	Agrico for New England 4-8-10	New Britain.....
8940	Agrico for Pastures and Top Dressing 7-6-6 ..	Danbury.....
8825	Agrico for Potatoes and Vegetables 5-8-7	West Cheshire.....
9117	Agrico for Potatoes and Vegetables 5-8-7	Guilford.....
9184	Agrico for Tobacco 6-3-6	Broad Brook.....
8932	Agrico for Truck 5-10-5	So. Norwalk.....
9113	Agrico for Truck 5-10-5	Danbury.....
9130	Double A Tobacco Fertilizer 5-3-5	Factory.....
9173	Sanderson's Formula B 4-8-7	Bloomfield.....
	American Cyanamid Co., New York City	
8833	Ammo-Phos 11-48-0	Southington.....
	Apothecaries Hall Co., Waterbury, Conn.	
9034	Liberty Corn 2-10-2	Jewett City.....
8994	Liberty Fish, Bone and Potash 3-10-4	East Windsor.....
9019	Liberty Fish, Bone and Potash 3-10-4	New London.....
8936	Liberty High Grade Corn 2-12-4	Greenwich.....
8358	Liberty High Grade Market Gardeners 5-8-7 ..	Naugatuck.....

¹Kraybill Method, 6.01%.²Kraybill Method, 5.69%.³Kraybill Method, 11.92%.⁴Kraybill Method, 13.99%.⁵Kraybill Method, 6.82%.⁶Kraybill Method, 6.05%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	2.64	0.27	1.09	4.00	0.85	10.09	9.24	3.30	4.06	8860
0.85	3.08	0.00	1.25	5.18	1.26	10.41	9.15	5.78	5.78 ¹	8861
1.68	3.76	0.44	0.50	6.38	0.48	8.59	8.11	5.22	5.50 ²	8859
0.00	4.68	0.20	0.27	5.15	0.46	14.28	13.82	9.31	9.31	9133
0.00	5.78	0.19	0.25	6.22	0.58	15.30	14.72	11.98	11.98 ³	9452
0.00	8.20	0.05	0.07	8.32	0.40	16.86	16.46	13.70	13.70 ⁴	9131
0.00	1.80	0.15	0.26	2.21	0.44	11.16	10.72	2.71	2.71	8854
0.22	3.16	0.23	0.54	4.15	0.21	8.89	8.68	4.22	4.22	8853
0.00	3.18	0.43	0.42	4.03	0.24	8.90	8.66	6.48	6.48 ⁵	8980
0.50	3.90	0.18	0.61	5.19	0.14	8.47	8.33	7.40	7.40	8817
0.20	1.64	0.08	0.20	2.12	0.32	8.44	8.12	10.62	10.62	9074
0.58	2.54	0.68	0.88	4.68	0.31	6.15	5.84	1.86	14.92	8982
0.36	6.06	0.43	0.38	7.23	0.19	6.99	6.80	6.05	6.05	8856
0.30	6.24	0.24	0.30	7.08	0.11	6.98	6.87	5.84	5.84	9118
0.00	2.68	0.17	0.29	3.14	0.42	10.70	10.28	4.17	4.17	8979
0.29	2.28	0.34	0.40	3.31	0.31	10.81	10.50	6.23	6.23	8851
0.16	2.38	0.50	0.27	3.31	0.51	10.93	10.42	5.79	5.79 ⁶	9111
0.47	6.20	0.08	0.34	7.09	0.16	6.83	6.67	6.10	6.10	8826
0.49	2.60	0.47	0.34	3.90	0.21	8.81	8.60	9.90	9.90	8857
0.00	6.18	0.39	0.44	7.01	0.23	6.70	6.47	6.41	6.41	8940
1.07	3.40	0.28	0.39	5.14	0.27	8.64	8.37	7.13	7.13	8825
0.84	3.36	0.40	0.35	4.95	0.35	8.98	8.63	7.25	7.25	9117
0.79	1.28	0.56	3.49	6.12	0.12	3.81	3.69	0.51	5.90	9184
0.60	4.04	0.22	0.21	5.07	1.02	11.21	10.19	5.00	5.00	8932
0.43	4.00	0.28	0.28	4.99	0.94	11.46	10.52	5.16	5.16	9113
0.51	1.36	0.62	2.62	5.11	0.14	4.04	3.90	0.72	5.65	9130
0.36	1.90	0.58	1.25	4.09	0.26	9.06	8.80	0.94	6.63 ⁵	9173
0.00	10.52	0.18	0.42	11.12	0.56	50.31	49.75	8833
0.25	1.44	0.48	0.25	2.42	1.21	12.04	10.83	2.52	2.52	9034
0.97	1.16	0.70	0.45	3.28	0.50	11.10	10.60	4.55	4.55	8994
1.20	1.20	0.52	0.24	3.16	0.94	10.91	9.97	4.54	4.54	9019
0.00	1.30	0.76	0.56	2.62	0.92	12.91	11.99	5.43	5.43	8936
2.15	1.76	0.56	0.75	5.22	0.73	10.51	9.78	7.09	7.09	8358

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
9078	Liberty High Grade Market Gardeners 5-8-7 ..	Cheshire.....
9081	Liberty High Grade Market Gardeners 5-8-7 ..	Hamden.....
9183	Liberty High Grade Tobacco Manure 6-3-7 ...	Broad Brook.....
8355	Liberty Market Gardeners Special 4-8-4	Naugatuck.....
9037	Liberty Onion Special (Potash as Sulphate) 4-8-7	East Windsor.....
9030	Liberty Potato and General Crops 4-8-10	Yantic.....
9038	Liberty Potato and Market Gardeners (Potash as Muriate) 4-8-7	East Windsor.....
9031	Liberty Potato and Vegetable 2-8-10	Yantic.....
8954	Liberty Special Fertilizer for Fruit 7-8-6	East Haddam.....
9187	Liberty Tobacco Fertilizer 6-3-6	Ellington.....
9219	Liberty Tobacco Mixture 7-3-7	Ellington.....
9311	Liberty Tobacco Special 5-3-5	East Windsor.....
8953	Liberty Top Dresser for Grass and Grain 8-8-8	East Haddam.....
Armour Fertilizer Works, New York City		
9009	Armour's Big Crop Fertilizer 2-10-2	Colchester.....
9040	Armour's Big Crop Fertilizer 3-12-6	Hartford.....
8835	Armour's Big Crop Fertilizer 4-8-4	Plantsville.....
9064	Armour's Big Crop Fertilizer 4-8-7	Hartford.....
9033	Armour's Big Crop Fertilizer 4-8-10	Norwich.....
9414	Armour's Big Crop Fertilizer 4-16-4	Hartford.....
8972	Armour's Big Crop Fertilizer 5-8-7	Plantsville.....
9125	Armour's Big Crop Fertilizer 5-8-7	Colchester.....
8836	Armour's Big Crop Fertilizer 7-6-6	Plantsville.....
8983	Armour's Big Crop Tobacco Special 5-3-5 ...	Thompsonville.....
Associated Seed Growers, Inc., New Haven, Conn.		
8887	Clark's Special Mixture for General Use 4-8-4	Milford.....
9012	Clark's Special Mixture for General Use 4-8-4	Orange.....
8886	Clark's Standard 4-8-7	Milford.....
8885	Tip Top Brand, Clark's 5-8-7	Milford.....
9011	Tip Top Brand, Clark's 5-8-7	Orange.....
F. A. Bartlett Tree Expert Co., Stamford, Conn.		
8933	Bartlett Green Tree Food 6-7-4	Factory.....
Berkshire Chemical Co., Bridgeport, Conn.		
8872	Berkshire 3-10-6 Fertilizer	Hamden.....
8890	Berkshire Complete Fertilizer 2-12-2	Norwalk.....

¹Kraybill Method, 9.44%.²Kraybill Method, 7.04%.³Kraybill Method, 6.96%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
1.99	1.96	0.80	0.75	5.50	0.66	10.90	10.24	7.29	7.29	9078
2.32	1.48	0.64	0.75	5.09	0.78	10.76	9.98	7.21	7.21	9081
1.31	0.40	1.24	2.93	5.88	0.20	5.34	5.14	1.46	7.51	9183
0.76	2.56	0.42	0.52	4.26	0.23	9.25	9.02	4.67	4.67	8355
2.00	0.92	0.44	0.86	4.22	1.11	13.11	12.00	0.57	7.98	9037
0.87	2.76	0.40	0.47	4.50	0.28	9.56	9.28	10.97	10.97	9030
0.83	2.56	0.44	0.41	4.24	0.50	9.12	8.62	7.91	7.91	9038
0.54	1.24	0.48	0.27	2.53	1.35	9.55	8.20	9.90	9.90	9031
3.65	2.76	0.54	0.35	7.30	0.90	8.98	8.08	5.94	5.94	8954
2.09	0.18	0.50	3.67	6.44	0.17	4.95	4.78	0.80	6.88	9187
2.34	0.00	1.00	3.62	6.96	0.21	4.72	4.51	1.06	7.25	9219
2.14	0.00	1.06	1.93	5.13	0.12	4.82	4.70	0.72	5.87	9311
1.82	6.20	0.51	0.21	8.74	0.28	10.96	10.68	9.28	9.28	8953
0.00	1.44	0.28	0.38	2.10	0.65	10.75	10.10	2.42	2.42	9009
0.31	2.00	0.16	0.59	3.06	0.95	13.16	12.21	6.60	6.60	9040
0.45	2.76	0.24	0.52	3.97	0.33	8.64	8.31	4.28	4.28	8835
0.84	2.12	0.36	0.58	3.90	0.74	8.94	8.20	7.00	7.00	9064
0.48	2.48	0.26	0.59	3.81	0.59	9.34	8.75	9.07	9.07 ¹	9033
0.41	3.28	0.20	0.15	4.04	0.67	17.11	16.44	3.98	3.98	9414
0.81	3.22	0.18	0.69	4.90	0.51	8.88	8.37	6.69	6.69 ²	8972
0.80	3.20	0.20	0.73	4.93	0.58	9.41	8.83	6.78	6.78 ³	9125
0.51	5.52	0.28	0.63	6.94	0.17	7.13	6.96	6.34	6.34	8836
2.23	0.22	0.36	2.53	5.34	0.19	4.13	3.94	0.58	5.06	8983
0.00	3.34	0.17	0.39	3.90	0.24	8.66	8.42	4.45	4.45	8887
0.00	3.18	0.42	0.38	3.98	0.31	8.69	8.38	3.71	4.42	9012
0.00	3.58	0.21	0.38	4.17	0.47	9.15	8.68	6.74	7.36	8886
0.41	3.96	0.38	0.36	5.11	0.50	8.91	8.41	6.94	7.47	8885
0.39	3.84	0.42	0.37	5.02	0.59	9.04	8.45	6.54	7.27	9011
0.00	4.94	0.00	1.38	6.32	2.68	9.32	6.64	4.17	4.17	8933
0.51	1.92	0.54	0.57	3.54	0.69	10.79	10.10	6.10	6.10	8872
0.37	0.86	0.72	0.36	2.31	0.65	12.73	12.12	3.18	3.18	8890

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
9174	Berkshire Complete Tobacco Fertilizer 5-3-5 .	Suffield.....
9191	Berkshire Double Strength Fertilizer 8-16-14 .	Factory.....
8889	Berkshire Economical Grass Fertilizer 8-8 ¹ -8..	Norwalk.....
9280	Berkshire Economical Grass Fertilizer 8-8 ¹ -8..	Factory.....
9087	Berkshire Golf Green Fertilizer 8-5-2	Factory.....
9112	Berkshire Golf Green Fertilizer 8-5-2	New Canaan.....
8930	Berkshire Grass Special Fertilizer 6-6-5	Norwalk.....
9182	Berkshire High Grade Tobacco Fertilizer 6-3-6	Melrose.....
8937	Berkshire Long Island Special Fertilizer 4-8-7	New Canaan.....
9116	Berkshire Long Island Special Fertilizer 4-8-7	Guilford.....
8873	Berkshire Market Garden Fertilizer 4-8-4	Hamden.....
9085	Berkshire Potato and Garden Special Fertilizer 5-8-7	Milford.....
8888	Berkshire Potato and Garden Special Fertilizer 5-8-7	Southport.....
9068	Berkshire Truck Fertilizer 4-8-5	Factory.....
Consolidated Rendering Co., Boston, Mass.		
9032	Corenco 2-10-2 Bone Brand	Lebanon.....
8834	Corenco 3-10-4 Animal Brand	Southington.....
9168	Corenco 3-10-4 Animal Brand	Unionville.....
8991	Corenco 4-8-4 Corn and Vegetable	Thompsonville.....
8929	Corenco 4-8-4 Corn and Vegetable	West Cheshire.....
8950	Corenco 4-8-7 Market Garden	Bethel.....
8949	Corenco 4-8-10 Potato Grower	Bethel.....
9121	Corenco 4-8-10 Potato Grower	West Willington.....
8989	Corenco 5-5-5 Lawn and Shrub Fertilizer	Thompsonville.....
8813	Corenco 5-8-7 General Crop Manure	West Cheshire.....
9115	Corenco 5-8-7 General Crop Manure	Guilford.....
8951	Corenco 5-8-10 Peerless Potato	Bethel.....
9170	Corenco 5-8-10 Peerless Potato	Unionville.....
9067	Corenco 5-10-5 Super Truck	New Haven.....
9169	Corenco 6-3-6 Special Tobacco Grower	Unionville.....
9206	Corenco 7-3-7 Super Tobacco Grower	Buckland.....
8814	Corenco 7-6-6 Complete Fruit and Top Dress- ing	West Cheshire.....
9016	Corenco 8-16-14 Two-in-One	New Haven.....
Davey Tree Expert Co., Kent, Ohio		
8935	Davey Tree Food 10-3-3	Old Greenwich.....
9415	Davey Tree Food 10-3-3	Old Greenwich.....

¹Registered 8% total phosphoric acid, largely from bone.²Kraybill Method, 9.38%.³Kraybill Method, 9.46%.⁴Kraybill Method, 3.04%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
1.32	0.00	1.64	2.33	5.29	0.24	4.05	3.81	0.56	6.07	9174
0.57	6.30	1.10	0.35	8.32	0.35	16.60	16.25	13.42	14.91	9191
3.56	3.20	0.26	1.09	8.11	1.47	8.51	7.04	7.00	7.81	8889
5.25	1.36	1.36	0.93	8.90	1.40	7.52	6.12	6.29	7.89	9280
0.25	2.30	0.94	5.00	8.49	1.45	7.92	6.47	2.90	2.90	9087
0.00	2.06	1.54	4.66	8.26	1.42	8.96	7.54	2.78	2.78	9112
0.26	4.56	0.20	0.98	6.00	0.34	7.36	7.02	6.18	6.18	8930
1.49	0.00	1.22	3.37	6.18	0.28	4.71	4.43	0.65	6.76	9182
0.73	2.14	0.42	0.65	3.94	0.46	9.46	9.00	7.19	7.19	8937
0.66	2.12	0.64	0.64	4.06	0.35	8.86	8.51	7.04	7.04	9116
0.82	2.24	0.56	0.67	4.29	0.39	8.66	8.27	4.45	4.45	8873
0.78	2.96	0.60	0.71	5.05	0.51	8.88	8.37	7.44	7.44	9085
0.85	3.28	0.32	0.75	5.22	0.54	9.40	8.86	7.19	7.19	8888
0.75	2.20	0.64	0.55	4.14	0.57	8.85	8.28	5.78	5.78	9068
0.71	1.12	0.42	0.23	2.48	0.65	10.93	10.28	2.98	2.98	9032
1.01	1.20	0.52	0.39	3.12	0.36	10.86	10.50	4.18	4.18	8834
0.86	1.04	0.76	0.40	3.06	0.51	10.55	10.04	4.19	4.19	9168
0.95	2.06	0.72	0.39	4.12	0.43	8.97	8.54	4.11	4.11	8991
0.95	2.04	0.64	0.40	4.03	0.39	9.10	8.71	4.05	4.05	8929
0.85	2.10	0.74	0.41	4.10	0.44	8.75	8.31	7.39	7.39	8950
1.01	2.06	0.57	0.37	4.01	0.37	8.85	8.48	9.94	9.94	8949
1.04	1.96	0.68	0.37	4.05	0.45	9.07	8.62	9.96	9.96	9121
0.77	2.24	0.46	1.77	5.24	0.41	6.82	6.41	0.69	5.53	8989
1.23	3.08	0.38	0.39	5.08	0.37	8.76	8.39	7.05	7.05	8813
0.96	3.12	0.60	0.42	5.10	0.41	8.96	8.55	7.13	7.13	9115
0.91	3.16	0.70	0.49	5.26	0.37	9.06	8.69	9.28	9.28 ²	8951
0.50	3.06	1.38	0.06	5.00	0.24	9.10	8.86	9.65	9.65 ³	9170
1.22	2.44	0.76	0.50	4.92	0.59	10.79	10.20	5.12	5.12	9067
1.17	0.14	1.72	3.05	6.08	0.15	4.63	4.48	0.96	5.96	9169
1.24	0.28	2.56	3.00	7.08	0.28	4.73	4.45	0.60	6.92	9206
1.02	5.20	0.58	0.40	7.20	0.22	7.20	6.98	6.26	6.26	8814
1.91	4.08	1.76	0.09	7.84	0.39	16.45	16.06	14.19	14.19	9016
0.74	6.40	0.32	2.12	9.58	0.39	4.27	3.88	3.09	3.09	8935
1.10	6.12	0.47	1.85	9.54	0.36	4.17	3.81	2.13	2.86 ⁴	9415

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
Eastern States Farmers' Exchange, Springfield, Mass.		
8997	Eastern States 0-14-6	East Hartford.....
8952	Eastern States 4-8-8	Clinton.....
9006	Eastern States 4-12-4	East Hartford.....
9186	Eastern States 4-12-4	Ellington.....
9007	Eastern States 4-16-20	East Hartford.....
9190	Eastern States 5-5-15 Tobacco	East Hartford.....
8978	Eastern States 6-8-6	Granby.....
9189	Eastern States 8-4-8 Tobacco	East Hartford.....
8998	Eastern States 8-12-20	East Hartford.....
8992	Eastern States 8-16-16	Hazardville.....
9029	Eastern States 8-16-16	Norwich.....
8995	Eastern States 8-16-16 (Low Chlorine Special)	Windsorville.....
8999	Eastern States 8-20-12	East Hartford.....
8944	Eastern States 8-24-8	New Milford.....
9172	Eastern States 8-24-8	Avon.....
8993	Eastern States 10-5-10 Tobacco	Hazardville.....
9185	Eastern States 10-5-10 Tobacco	Ellington.....
8945	Eastern States 12-4-4	New Milford.....
8996	Eastern States 12-16-12	East Hartford.....
9120	Eastern States 12-16-12	West Simsbury.....
Goulard & Olena, Inc., New York City		
8863	G & O Lawn, Garden and Flower Fertilizer 5-8-5	New Britain.....
8862	J. B. Golf Greens Formula 10-4-3	New Britain.....
Paul M. Hubbard & Co., Bristol, Conn.		
8973	Hubbard's Special Lawn Food 10-6-4	Factory.....
International Agricultural Corp., Boston, Mass.		
8829	International 3-10-4	Plainville.....
9128	International 3-10-4	Montville.....
8827	International 4-8-4	Plainville.....
8828	International 5-8-7	Plainville.....
9127	International 5-8-7	Montville.....
9201	International 8-16-14	Norwich.....
8830	International Caribee Market Garden Fertilizer 5-10-10	Plainville.....
9126	International Caribee Market Garden Fertilizer 5-10-10	Montville.....

¹Kraybill Method, 19.21%.²Kraybill Method, 11.74%.³Kraybill Method, 6.61%.⁴Kraybill Method, 13.74%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
.....	0.26	14.54	14.28	7.16	7.16	8997
0.88	3.06	0.34	0.42	4.70	0.38	9.00	8.62	8.16	8.51	8952
1.41	2.72	0.04	0.15	4.32	0.19	12.55	12.36	4.28	4.28	9006
1.17	2.56	0.24	0.25	4.22	0.45	13.29	12.84	3.84	4.50	9186
0.63	3.00	0.22	0.35	4.20	0.64	17.50	16.86	16.61	19.92	9007
2.55	0.20	0.08	2.70	5.53	0.15	6.97	6.82	1.26	15.95	9190
0.00	4.28	2.05	0.17	6.50	0.10	8.28	8.18	6.15	6.63	8978
3.99	0.22	2.26	2.44	8.91	0.10	5.00	4.90	0.35	8.94	9189
1.75	6.00	0.17	0.30	8.22	0.05	12.67	12.62	14.25	19.09 ¹	8998
1.62	5.84	0.25	0.25	7.96	0.11	16.23	16.12	16.19	17.64	8992
2.09	6.20	0.04	0.17	8.50	0.17	16.51	16.34	16.65	16.65	9029
1.61	5.88	0.14	0.27	7.90	0.14	15.49	15.35	1.12	18.07	8995
1.29	5.84	0.16	0.35	7.64	0.28	19.65	19.37	16.34	16.34	8999
2.50	5.08	0.36	0.41	8.35	0.61	24.48	23.87	4.29	9.68	8944
2.76	5.04	0.00	0.36	8.16	0.53	24.30	23.77	1.00	8.62	9172
2.96	0.52	2.06	2.56	10.66	0.19	6.65	6.46	0.49	10.70	8993
3.76	0.32	2.64	2.82	9.54	0.28	6.61	6.33	0.48	11.12	9185
3.99	8.10	0.35	0.23	12.67	0.10	4.75	4.65	4.58	4.58	8945
4.10	8.40	0.00	0.22	12.72	0.05	15.70	15.65	0.22	13.06	8996
3.63	6.79	0.00	0.21	10.63	0.09	15.14	15.05	0.25	11.51 ²	9120
0.45	2.92	0.24	1.20	4.81	1.50	10.07	8.57	5.92	5.92	8863
0.40	0.92	2.72	5.57	9.61	3.36	7.72	4.36	4.13	4.13	8862
0.13	6.16	0.58	3.67	10.54	0.34	7.97	7.63	5.12	5.12	8973
0.68	2.00	0.28	0.12	3.08	0.19	10.40	10.21	4.24	4.24	8829
0.60	2.40	0.48	0.17	3.65	0.19	9.89	9.70	5.45	5.45	9128
0.56	2.88	0.36	0.22	4.02	0.19	8.25	8.06	3.93	3.93	8827
0.74	3.16	0.56	0.33	4.79	0.17	8.79	8.62	7.66	7.66	8828
0.93	3.18	0.40	0.26	4.77	0.26	9.34	9.08	6.47	6.47 ³	9127
0.78	6.62	0.44	0.16	8.00	0.27	17.18	16.91	12.45	13.52 ⁴	9201
1.96	1.56	0.40	1.34	5.26	0.49	11.18	10.69	3.65	10.37	8830
1.98	1.44	0.30	1.38	5.10	0.47	11.82	11.35	3.60	10.41	9126

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Millane Nurseries & Tree Expert Co., Cromwell, Conn.	
8864	Millane Shade Tree Food 8-8-4	Factory.....
	The Miller Fertilizer Co., Baltimore, Md.	
9025	Miller's Harvest Brand 4-8-4	Norwich.....
9027	Miller's Harvest Brand 4-8-10	Norwich.....
9208	Miller's Harvest Brand 5-3-5	East Windsor Hill.....
9024	Miller's Harvest Brand 5-8-7	Norwich.....
9023	Miller's Harvest Brand 7-6-6	Norwich.....
9026	Miller's Harvest Brand 8-16-14	Norwich.....
9199	Miller's Harvest Brand 8-16-14	Norwich.....
	Milwaukee Sewerage Commission, Milwaukee, Wis.	
9073	Milorganite 6-2-0	Torrington.....
	Old Deerfield Fertilizer Co., So. Deerfield, Mass.	
9177	Old Deerfield Complete Tobacco 5-3-5	Somers.....
9180	Old Deerfield Complete Tobacco Fertilizer 6-3-7	Somers.....
9221	Old Deerfield Tobacco Starter 5-8-12	Bloomfield.....
9181	Special Formula Valley 5-10-5	Somers.....
9035	Valley Brand 4-8-4	Somers.....
9036	Valley Brand 5-8-7	Somers.....
	Olds & Whipple, Inc., Hartford, Conn.	
9203	Luxura 5-8-6	Factory.....
9207	O&W Blue Label Tobacco Fertilizer 6-3-5 (Potash derived from Cottonhull Ashes)	East Hartford.....
9220	O&W Blue Label Tobacco Fertilizer 6-3-6 ...	Suffield.....
9175	O&W Complete Tobacco Fertilizer 5-3-5	Suffield.....
8976	O&W Corn Special 3-10-4	Bloomfield.....
8869	O&W High Grade Potato and Vegetable Fer- tilizer 5-8-7	So. Manchester.....
9204	O&W High Grade Tobacco Starter and Potash Compound 5-4-15	East Hartford.....
8868	O&W Market Garden Fertilizer 4-8-4	So. Manchester.....
8975	O&W Potato and General Purpose 4-8-7	Wethersfield.....
8977	O&W Potato and General Purpose 4-8-7	Bloomfield.....
8870	O&W Top Dressing and Grass Fertilizer 8-6-6	So. Manchester.....
9020	Wilcox Corn Special Fertilizer 3-10-4	Old Mystic.....

¹Kraybill Method, 9.13%.²Kraybill Method, 13.72%.³Kraybill Method, 6.86%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
2.47	3.84	0.66	0.56	7.53	0.61	9.26	8.65	4.60	4.60	8864
0.32	2.60	0.42	0.44	3.78	0.51	9.97	9.46	4.16	4.16	9025
0.48	2.72	0.28	0.38	3.86	0.72	9.56	8.84	8.86	8.86 ¹	9027
4.32	0.00	0.12	0.26	4.70	0.21	4.53	4.32	1.10	4.91	9208
0.27	3.56	0.44	0.39	4.66	0.46	8.29	7.83	7.43	7.43	9024
0.49	4.66	0.42	0.35	5.92	0.69	8.53	7.84	5.92	5.92	9023
0.21	6.76	0.56	0.15	7.68	0.49	17.98	17.49	13.59	13.59 ²	9026
0.29	5.02	3.04	0.15	8.50	0.45	17.39	16.94	14.10	14.10	9199
....	5.71	0.59	2.79	2.20	9073
0.84	0.12	1.24	2.93	5.13	0.23	4.69	4.46	0.64	5.45	9177
0.54	0.08	1.72	3.85	6.19	0.29	5.43	5.14	0.64	7.56	9180
1.80	0.04	1.24	2.80	5.88	0.70	8.74	8.04	1.37	12.08	9221
1.95	2.46	1.07	0.10	5.58	0.17	10.32	10.15	5.54	5.54	9181
1.68	1.84	0.62	0.12	4.26	0.11	8.90	8.79	4.37	4.37	9035
1.59	1.92	1.46	0.11	5.08	0.25	8.88	8.63	6.71	6.71 ³	9036
0.50	2.26	0.42	2.24	5.42	1.74	12.22	10.48	0.60	6.56	9203
0.70	0.28	2.52	2.76	6.26	0.25	3.98	3.73	0.64	5.19	9207
0.90	0.08	1.68	3.44	6.10	0.23	3.72	3.49	0.56	6.45	9220
0.99	0.00	0.62	3.80	5.41	0.29	3.90	3.61	0.57	5.52	9175
0.19	2.18	0.28	0.67	3.32	0.36	10.92	10.56	4.62	4.62	8976
0.69	3.10	0.44	0.91	5.14	0.50	9.00	8.50	7.27	7.27	8869
2.05	0.06	0.14	2.75	5.00	0.41	5.42	5.01	1.16	15.06	9204
0.73	2.36	0.46	0.72	4.27	0.46	9.26	8.80	4.32	4.32	8868
0.13	2.02	0.90	1.13	4.18	0.55	9.80	9.25	7.57	7.57	8975
0.50	2.78	0.12	0.62	4.02	0.40	9.06	8.66	7.15	7.15	8977
4.23	3.54	0.12	0.38	8.27	0.26	6.88	6.62	6.55	6.55	8870
0.26	2.00	0.40	0.58	3.24	0.46	10.90	10.44	4.52	4.52	9020

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
9022	Wilcox Market Garden 4-8-4	Old Mystic.....
9124	Wilcox Potato and General Purpose 4-8-7	Willimantic.....
9021	Wilcox Top Dresser Fertilizer 8-6-6	Old Mystic.....
	Outpost Nurseries, Inc., Ridgefield, Conn.	
8939	Outpost Plant Food 8-5-2	Factory.....
	Plantspur Products Co., Inc., Ridgefield, N. J.	
9129	Plantspur Fertilizer 3-3-2	New Haven.....
	Frank S. Platt Co., New Haven, Conn.	
8883	Platco Special 5-8-7	Factory.....
8882	Platt's Special Lawn Fertilizer 10-5-5	Factory.....
	The Rogers & Hubbard Co., Portland, Conn.	
9080	Golf Course Fertilizer 8-6-2	Factory.....
9083	Golf Course Fertilizer 8-6-2	New Haven.....
8850	Gro-Fast 5-6-6	Meriden.....
8948	Hubbard's All Soils All Crops 4-8-4	New Milford.....
8855	Hubbard's "Bone Base" Oats and Top Dress- ing	Kensington.....
8867	Hubbard's "Bone Base" Fertilizer for Seeding Down	Factory.....
9167	Hubbard's "Bone Base" Soluble Corn and Market Garden Manure	Factory.....
9278	Hubbard's "Bone Base" Soluble Potato and Tobacco Manure	Factory.....
8946	Hubbard's Corn and Grain Fertilizer 2-12-4 ..	New Milford.....
9122	Hubbard's Corn and Grain Fertilizer 2-12-4 ..	Willimantic.....
9176	Hubbard's Climax Tobacco Brand 5-3-5	Hazardville.....
8881	Hubbard's High Potash Fertilizer 2-8-10	New Haven.....
8947	Hubbard's Potato Fertilizer 5-8-7	New Milford.....
9114	Hubbard's Potato Fertilizer 5-8-7	Branford.....
9171	Hubbard's Tobacco Grower-Vegetable Formula 6-3-6	Avon.....
8941	Red H General Cropper 4-8-4	Danbury.....
8943	Red H Grass Cropper 7-6-6	Danbury.....
9303	Red H Grass Cropper 7-6-6	Factory.....
9010	Red H Hi-Grade Cropper 8-16-14	Factory.....

¹Kraybill Method, 5.25%.²Kraybill Method, 13.82%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.71	2.46	0.22	0.83	4.22	0.45	9.14	8.69	3.92	4.31	9022
0.61	2.58	0.48	0.54	4.21	0.60	9.64	9.04	7.42	7.42	9124
5.54	1.36	0.36	0.68	7.94	0.35	7.04	6.69	5.97	5.97	9021
0.00	2.22	1.23	4.96	8.41	1.53	7.51	5.98	2.18	2.54	8939
0.00	3.28	0.03	0.48	3.79	0.26	3.91	3.65	2.55	2.55	9129
0.88	3.20	0.66	0.46	5.20	0.36	8.78	8.42	7.09	7.09	8883
0.21	7.62	0.88	2.35	11.06	0.15	7.25	7.10	6.14	6.14	8882
0.00	1.44	2.39	4.27	8.10	1.45	9.12	7.67	2.64	2.64	9080
0.29	1.60	1.96	4.15	8.00	1.28	8.61	7.33	2.46	2.46	9083
0.00	1.48	0.04	3.86	5.38	0.46	7.10	6.64	1.04	7.06	8850
0.70	1.26	1.24	0.72	3.92	1.71	9.95	8.24	4.37	4.37	8948
7.25	0.00	0.27	0.84	8.36	0.21	8.51	8.30	0.56	8.31	8855
0.00	1.00	0.38	1.74	3.12	2.57	12.65	10.08	6.01	6.01	8867
0.65	1.80	1.04	0.63	4.12	1.35	10.37	9.02	7.75	7.75	9167
1.37	1.68	1.01	0.89	4.95	1.45	12.36	10.91	1.12	10.52	9278
0.00	1.06	0.96	0.34	2.36	0.95	13.05	12.10	4.15	4.15	8946
0.00	1.16	0.95	0.33	2.44	0.98	13.25	12.27	4.70	4.70	9122
1.29	0.12	0.82	3.02	5.25	0.79	4.73	3.94	0.81	6.03	9176
0.00	1.24	0.65	0.32	2.21	0.82	8.98	8.16	10.89	10.89	8881
0.20	2.30	1.45	1.05	5.00	1.50	10.26	8.76	7.27	7.27	8947
0.29	2.92	1.16	0.77	5.14	1.55	10.12	8.57	7.09	7.09	9114
1.10	0.08	0.92	3.90	6.00	0.29	4.55	4.26	0.70	6.61	9171
0.00	3.64	0.35	0.31	4.30	0.71	9.32	8.61	4.50	4.50	8941
0.00	5.38	0.74	0.44	6.56	0.45	8.90	8.45	4.97	4.97 ¹	8943
0.35	5.56	0.56	0.45	6.92	0.56	7.64	7.08	6.18	6.18	9303
0.00	3.42	4.38	0.50	8.30	0.50	17.06	16.56	13.62	13.62 ²	9010

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
8846	Red H Potato Cropper 5-8-7	Meriden.....
8847	Red H Truckers' Special Cropper 4-8-7	Meriden.....
9279	Red H Truckers' Special Cropper 4-8-7	Factory.....
	O. M. Scott & Sons Co., Marysville, Ohio	
8845	Scott's 10-6-4 Turf Builder	Yalesville.....
	M. L. Shoemaker & Co., Philadelphia, Pa.	
8981	Shoemaker "Swift-Sure" Tobacco Starter 4-10-0	Suffield.....
	Standard Wholesale Phosphate & Acid Works, Baltimore, Md.	
9198	Pinkerton Bell Brand 7-12-12	Norwich.....
9017	Standard United States 4-8-4	New London.....
9039	Standard United States 5-8-7	Ellington.....
	Stumpp & Walter Co., New York City	
9013	Sawco Emerald Grass Fertilizer 5-6-2	Stamford.....
9014	Sawco General Garden Fertilizer 5-8-5	Stamford.....
8804	Sawconite 6-0-0	Stamford.....
	Summers Fertilizer Co., Inc., Baltimore, Md.	
8877	2-10-2 Fertilizer	Union City.....
8811	4-8-4 Fertilizer	Mt. Carmel.....
9082	4-8-4 Fertilizer	Union City.....
9071	4-8-7 Fertilizer	Seymour.....
8812	5-8-7 Fertilizer	Mt. Carmel.....
9072	5-8-7 Fertilizer	Seymour.....
8874	8-6-6 Fertilizer	Seymour.....
	Sutton & Sons, Ltd., Reading, England	
9135	Sutton's Simplex Fertilizer 5-9-2	Stamford.....
	Swift & Company Fertilizer Works, Baltimore, Md.	
8849	Swift's Special Golf Fertilizer 12-6-4	Meriden.....
8816	Vigoro 4-12-4	Cheshire.....

¹Kraybill Method, 6.94%.²Kraybill Method, 6.06%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	4.00	0.64	0.36	5.00	0.63	9.20	8.57	6.88	6.88	8846
0.00	2.96	0.79	0.28	4.03	0.53	9.33	8.80	6.77	6.77 ¹	8847
0.00	3.06	0.91	0.27	4.24	0.60	9.21	8.61	7.50	7.50	9279
0.00	6.12	0.30	3.61	10.03	0.44	6.53	6.09	3.73	4.43	8845
0.20	2.84	0.64	0.54	4.22	1.86	13.11	11.25	8981
0.86	4.66	0.18	0.46	6.16	0.62	12.39	11.77	7.85	12.05	9198
0.00	3.28	0.31	0.57	4.16	0.61	8.98	8.37	4.26	4.26	9017
0.00	1.84	2.38	0.56	4.78	0.82	9.89	9.07	5.29	6.82	9039
0.00	2.90	0.45	2.05	5.40	0.71	7.36	6.65	3.07	3.07	9013
0.95	3.16	0.35	0.76	5.22	0.45	9.22	8.77	5.35	5.35	9014
0.00	0.12	2.09	3.99	6.20	8804
0.46	1.56	0.12	0.16	2.30	0.86	11.35	10.49	2.27	2.27	8877
0.64	3.36	0.08	0.42	4.50	0.66	9.40	8.74	5.50	5.50	8811
0.51	3.12	0.24	0.17	4.04	0.76	9.23	8.47	3.04	4.07	9082
0.63	2.96	0.12	0.15	3.86	0.85	9.56	8.71	6.89	6.89	9071
1.13	3.74	0.06	0.57	5.50	0.67	9.50	8.83	6.03	6.03 ²	8812
0.90	3.44	0.16	0.16	4.66	0.65	9.48	8.83	7.42	7.42	9072
2.65	5.18	0.22	0.11	8.16	0.55	7.01	6.46	6.03	6.03	8874
0.00	2.00	0.87	3.31	6.18	3.72	10.17	6.45	0.64	2.73	9135
0.32	11.00	0.20	0.09	11.61	0.07	6.85	6.78	4.78	4.78	8849
0.36	3.52	0.00	0.15	4.03	0.58	13.15	12.57	4.65	4.65	8816

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Synthetic Nitrogen Products Corp., New York City	
9209	Nitrophoska 15-30-15	Hartford.....
	Tennessee Corp., Lockland, Ohio	
8938	Loma 5-10-4	New Canaan.....
9008	Soil Prep 4-2-2	Hartford.....
	I. P. Thomas & Son Co., Philadelphia, Pa.	
8842	Fish and Potash Brand 5-8-5	North Haven.....
8843	High Grade Potato 4-8-10	North Haven.....
8840	I. P. Thomas 4-8-7	North Haven.....
8841	I. P. Thomas 5-8-7	North Haven.....
8005	Tip Top Fertilizer 3-10-6	Hamden.....
8844	Truckers' High Grade Guano 4-8-4	Wallingford.....
	Virginia-Carolina Chemical Corp., Richmond, Va.	
9222	Bloomaid (New Process) 4-10-3	Bridgeport.....
9223	V-C Fairway Fertilizer (New Process) 6-6-4 ..	Bridgeport.....
	F. H. Woodruff & Sons, Milford, Conn.	
8884	Woodco Lawn Food 10-6-4	Factory.....

¹Kraybill Method, 14.75%.²Kraybill Method, 9.21%.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
1.93	12.72	0.08	0.27	15.00	0.05	30.50	30.45	14.71	14.71 ¹	9209
0.00	4.30	0.41	0.38	5.09	0.49	11.39	10.90	4.17	4.17	8938
0.19	1.88	0.56	1.81	4.44	0.28	2.35	2.07	2.58	2.58	9008
0.31	3.48	0.48	0.53	4.80	0.68	9.20	8.52	4.88	4.88	8842
0.35	2.80	0.52	0.28	3.95	0.83	10.21	9.38	8.95	8.95 ²	8843
0.47	2.66	0.62	0.23	3.98	0.43	9.46	9.03	7.13	7.13	8840
0.43	3.46	0.54	0.39	4.82	0.51	9.00	8.49	7.38	7.38	8841
0.38	2.40	0.60	0.32	3.70	0.98	11.18	10.20	6.00	6.00	8005
0.42	2.56	0.60	0.29	3.87	1.27	9.54	8.27	4.70	4.70	8844
0.18	2.68	0.40	0.88	4.14	0.31	12.92	12.61	1.46	3.28	9222
0.18	3.96	0.26	1.97	6.37	0.50	7.89	7.39	2.70	4.55	9223
0.00	3.10	3.75	2.89	9.74	0.30	7.30	7.00	4.34	4.34	8884

TABLE 10. SUMMARY OF CHEMICAL DEFICIENCIES

Manufacturer	Number samples	Number guaranties	Deficiencies			Percentage of guaranties met
			Nitrogen	Available P_2O_5	Potash	
Acme Guano Co.	5	15	3	2	4	40
American Agricultural Chemical Co.	22	66	1	0	0	98
American Cyanamid Co.	1	2 ¹	0	0	..	100
Apothecaries Hall Co.	18	54	1	0	0	98
Armour Fertilizer Works	10	30	1	0	1	93
Associated Seed Growers, Inc.	5	15	0	0	0	100
Bartlett, F. A., Tree Expert Co. ...	1	3	0	1	0	67
Berkshire Chemical Co.	16	48	0	1 ²	0	98
Consolidated Rendering Co.	18	54	1	0	2	94
Davey Tree Expert Co.	2	6	2	0	0	67
Eastern States Farmers' Exchange	20	59 ³	2	5	2	85
Goulard & Olen, Inc.	2	6	2	0	0	67
Hubbard, Paul M., & Co.	1	3	0	0	0	100
International Agricultural Corp. ...	8	24	2	1	2	79
Millane Nurseries & Tree Experts Co.	1	3	1	0	0	67
Miller Fertilizer Co., Inc.	7	21	6	0	2	62
Milwaukee Sewerage Commission .	1	2 ¹	1	0	..	50
Old Deerfield Fertilizer Co.	6	18	0	0	0	100
Olds & Whipple, Inc.	15	45	0	0	0	100
Outpost Nurseries, Inc.	1	3	0	0	0	100
Plantspur Products Co., Inc.	1	3	0	0	0	100
Platt, Frank S., Co.	2	6	0	0	0	100
Rogers & Hubbard Co., The	22	66	1	0	1	97
Scott, O. M., & Sons, Co.	1	3	0	0	0	100
Shoemaker, M. L. & Co.	1	2 ¹	0	0	..	100
Standard Wholesale Phosphate & Acid Works	3	9	2	1	0	67
Stumpp & Walter Co.	3	7 ⁴	0	0	0	100
Summers Fertilizer Co., Inc.	7	21	1	0	1	90
Sutton & Sons, Ltd.	1	3	0	1	0	67
Swift & Co., Fertilizer Works	2	6	1	0	0	83
Synthetic Nitrogen Products Corp.	1	3	0	0	1	67
Tennessee Corp.	2	6	0	0	0	100
Thomas, I. P. & Son Co.	6	18	3	0	1	67
Virginia-Carolina Corp.	2	6	0	0	0	100
Woodruff, F. H., & Sons	1	3	1	0	0	67
	215	639	32	12	17	90

¹Only two guaranties for this sample.²Low in total phosphoric acid.³One sample with only two guaranties.⁴One sample with only one guaranty.

TABLE 11. ANALYSES OF SPECIAL AND HOME MIXTURES

Station No.	Name of mixture	Place of sampling	Total nitrogen %	Phosphoric acid			Potash			Station No.
				Citrate-insoluble %	Total %	So-called "Available" %	As muriate %	Total %	Chlorine %	
8928	Sampled by Station Special Mixture for Potatoes ..	Cheshire Reformatory, West Cheshire	5.46	0.42	9.39	8.97	7.27	7.27	8928
9056	Special Mixture for Vegetables.	T. W. Ryan, Stratford	5.75	0.63	8.09	7.46	5.35	5.35	9056
8312	Sampled by Purchaser Formula A	American Sumatra Tobacco, Bloomfield	5.65	0.33	2.99	2.66	1.04	6.28	0.78	8312
9443	Fertilizer Special Mixture	W. DeBin, Farmington	8.73	1.40	8.12	6.72	3.02	3.02 ¹	9443
8254	Fertilizer No. 6	Consolidated Cigar Corp., Hartford	6.14	0.70	4.50	3.80	0.53	6.43	0.40	8254
8255	Fertilizer No. 12	Consolidated Cigar Corp., Hartford	6.40	0.56	4.54	3.98	0.61	6.83	0.46	8255
8256	Fertilizer No. 18	Consolidated Cigar Corp., Hartford	6.22	0.52	4.56	4.04	0.40	6.51	0.30	8256
8257	Fertilizer No. 24	Consolidated Cigar Corp., Hartford	6.24	0.52	4.67	4.15	0.58	6.79	0.44	8257

¹Kraybill Method.

TABLE 11. ANALYSES OF SPECIAL AND HOME MIXTURES—Continued

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	So-called "Available"	As muriate	Total	Chlorine	
8258	Fertilizer No. 30	Consolidated Cigar Corp., Hartford	% 6.20	% 0.58	% 4.52	% 3.94	% 0.58	% 6.94	% 0.44	8258
8259	Fertilizer No. 42	Consolidated Cigar Corp., Hartford	6.06	0.57	4.82	4.25	0.51	5.49	0.38	8259
8626	Home Mixture Fertilizer, Can No. 1	S. A. Fassler & Co., Hartford ..	6.20	0.36	5.27	4.91	0.51	6.02	0.38	8626
8627	Home Mixture Fertilizer, Hall Farm	S. A. Fassler & Co., Hartford ..	6.02	0.34	5.69	5.35	0.47	6.22	0.35	8627
8628	Home Mixture Fertilizer, Sullivan's Farm	S. A. Fassler & Co., Hartford ..	6.04	0.29	5.39	5.10	0.53	6.35	0.40	8628
8387	Home Mixture, No. 1, Hazardville	L. B. Haas & Co., Inc., Hartford	7.19	0.34	3.41	3.07	0.78	7.52	0.59	8387
8388	Home Mixture No. 2, Hazardville	L. B. Haas & Co., Inc., Hartford	6.98	0.31	3.30	2.99	0.77	7.79	0.58	8388
8562	Tobacco Fertilizer	Leslie W. Newberry, So. Windsor	7.10	0.31	2.88	2.57	0.62	5.65	0.47	8562
9440	Home Mixed Fertilizer 5-8-7 ..	Matulis Bros., Broadbrook	5.09	2.33	9.25	6.92	5.28	9.73	3.97	9440

VII. MISCELLANEOUS FERTILIZERS AND OTHER MATERIALS

SHEEP MANURE, ETC.

Analyses of 21 samples of sheep manure and other dried and pulverized farm manures are given in Table 12.

LIMING MATERIALS

Liming materials are not subject to inspection under the fertilizer law but samples are taken and analyses published for the information of purchasers.

Analyses of samples examined this year are given in Table 13.

OTHER MISCELLANEOUS MATERIALS

Thirty-nine samples of miscellaneous fertilizer materials have been examined including samples of humus or peat.

Analyses of two of them are recorded for reference.

8971. **Hops** (from a brewery plant). Analysis of the sample as submitted is as follows: Water, 70.79%; ash, 8.06%; organic and volatile matter, 21.15%. Nitrogen, 1.15%; phosphoric acid, total, 0.42%; potash, 0.05%.

9700. **Charcoal ("Charket") ashes**. Tobacco growers burn large quantities of charcoal in the sheds where tobacco is curing. A sample of the ashes was analyzed as follows: phosphoric acid, 0.93%; potash soluble in water, 4.26%; chlorine, trace; calcium oxide, 32.15%; magnesium oxide, 2.30%.

9663. **Charcoal Ashes**. This is the same sort of material as the above, 9700. It contained 1.60% of phosphoric acid, 8.67% of water-soluble potash, 40.75% of calcium oxide and 3.84% of magnesium rock.

CHECK MEALS AND FERTILIZERS

Forty-two samples of check meals and fertilizers have been analyzed in the collaboration programs of the American Oil Chemists Society and of the F. S. Royster Guano Co.

TABLE 12. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS

Station No.	Manufacturer and brand	Place of sampling	Nitrogen		Total phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
8931	AAC Pulverized Sheep and Goat Manure. American Agricultural Chemical Co., West Haven, Conn.	Roodner Feed Co., So. Norwalk ..	1.80	1.25	1.26	1.00	3.79	2.00	8931
9815	Sheep and Goat Manure. Apothecaries Hall Co., Waterbury, Conn...	R. W. Hine, Cheshire	1.29	1.25	1.38	1.00	2.81	2.00	9815
9119	Sheep and Goat Manure. Apothecaries Hall Co., Waterbury, Conn.	Factory, East Windsor	1.29	1.25	1.45	1.00	3.04	2.00	9119
9066	Sheep and Goat Manure. Armour Fertilizer Works, New York City	Taken at dock, Hartford	1.65	1.25	2.95 ¹	3.20	2.00	9066
9028	Associated Sheep and Goat Manure. Associated Chemical Co., Baltimore, Md.	A. E. Shedd, Norwich	1.52	1.25	1.90 ²	3.59	2.00	9028
8876	Driconure. Atkins and Durbrow, Inc., New York City	C. A. Templeton, Inc., Waterbury	2.28	1.00	1.02	1.00	1.84	1.00	8876
8878	Two-in-One Peat and Poultry Manure, C. E. Buell, Inc., Boston, Mass.	Lightbourn & Pond, New Haven..	3.08	3.00	3.03	3.00	1.26	1.50	8878
8832	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	State Farmers Co-op., Plainville ..	1.72	1.23	1.20	0.50	3.48	2.00	8832
8934	Davey Shredded Cattle Manure. Davey Tree Expert Co., Kent, Ohio	R. E. Landis, Old Greenwich	2.15	1.00	1.95	1.00	2.09	2.00	8934

¹Guaranteed "available" phosphoric acid 1.00%; found 1.87%.²Guaranteed "available" phosphoric acid 1.00%; found 1.75%.

		%	%	%	%	%	%	%
9000	"Sheep's Head" Pulverized Sheep Manure. Natural Guano Co., Aurora, Ill.	2.39	2.00	1.38 ³	3.50	2.00	9000
8871	Groz-it Brand Pulverized Sheep Manure. Pacific Manure and Fertilizer Co., San Francisco, Calif.	2.06	1.25	1.63	1.00	3.43	2.00	8871
8879	Premier Brand Pulverized Poultry Manure. Premier Poultry Manure Co., Chicago, Ill.	5.66	4.93	2.50 ⁴	2.75	1.12	1.30	8879
8990	Wizard Brand Cow Manure. Pulverized Manure Co., Chicago, Ill.	2.34	2.00	1.35 ⁵	0.98	1.00	8990
8858	Wizard Brand Pulverized Sheep Manure. The Pulverized Manure Co., Chicago, Ill.	2.12	2.00	2.01 ⁶	2.56	2.00	8858
8848	Pulverized Sheep and Goat Manure. The Rogers and Hubbard Co., Portland, Conn.	1.58	1.25	1.26	0.75	3.78	2.00	8848
9015	Sawconure. Stumpp & Walter Co., New York City	3.43	3.00	3.45 ⁷	1.45	1.00	9015
	Caldwell & Jones, Hartford							
	Gabriel Dadio, Hamden							
	Lightbourn & Pond, New Haven..							
	Brainard Nursery, Thompsonville ..							
	S. P. Stroppe, New Britain							
	Raven Hardware Co., Meriden							
	Stumpp & Walter Co., Stamford...							

³Guaranteed "available" phosphoric acid 1.00%; found 1.11%.

⁴Guaranteed "available" phosphoric acid 2.50%; found 2.39%.

⁵Guaranteed "available" phosphoric acid 1.00%; found 0.99%.

⁶Guaranteed "available" phosphoric acid 1.00%; found 1.80%.

⁷Guaranteed "available" phosphoric acid 1.00%; found 3.26%.

TABLE 12. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS—Continued

Station No.	Manufacturer and brand	Place of sampling	Nitrogen		Total phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
8974	Summers' Sheep Manure. Summers Fertilizer Co., Inc., Baltimore, Md.	Stanley Svea Grain & Coal Co., New Britain	1.74	1.00	1.75	1.00	3.24	2.00	8974
8810	Summers' Genuine Venezuelan Goat Manure. Summers Fertilizer Co., Inc., Baltimore, Md.	Hamden Grain Co., Mt. Carmel ...	2.43	1.00	3.25	1.00	3.72	3.00	8810
8875	Bovung. Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.	C. A. Templeton, Inc., Waterbury .	2.22	2.00	1.93	2.00	2.11	2.00	8875
9211	Woodgro Pure Cow Manure Dehydrated. Thos. Wood & Sons, Montclair, N. J.	Silliman Hardware Co., New Canaan	3.08	2.00	2.99	2.00	5.33	4.00	9211
9212	Woodgro Pure Cow Manure Dehydrated. Thos. Wood & Sons, Montclair, N. J.	W. J. Rice, Stamford	3.27	2.00	2.84	2.00	5.10	4.00	9212

TABLE 13. ANALYSES OF LIMESTONE

Station No.	Manufacturer and brand	Sampled from stock of or sent by
8969	E. P. Allen, East Canaan, Conn. Limestone	E. P. Allen, East Canaan
8292	Louis E. Allen, East Canaan, Conn. Limestone	Louis E. Allen, East Canaan
8046 8019	Lee Lime Corp., Lee, Mass. Agricultural Hydrated Lime Agricultural Hydrated Lime	Cullman Bros., Inc., Simsbury Cullman Bros., Inc., Granby
7545 7561 7758	New England Lime Co., Pittsfield, Mass. Hydrated Lime, Sample No. 6 Hydrated Lime, No. 1 Hydrated Lime, No. 12	Consolidated Cigar Corp., Hartford American Sumatra Tobacco Corp., Bloomfield Consolidated Cigar Corp., Hartford
7159 8029 8235	Manufacturer Unknown Lime Rock Lime Ground Limestone	LeRoy M. Chapman, County Agent, Danbury George Tachander, Southbury Leroy W. Cooper, Hartford

AND SIMILAR MATERIALS

Chemical analysis				Total oxides	Mechanical analysis					Station No.
Lime (CaO)		Magnesia (MgO)			20 mesh	40 mesh	50 mesh	80 mesh	100 mesh	
Found	Guaranteed	Found	Guaranteed							
%	%	%	%	%	%	%	%	%	%	
27.39	18.44	45.83	8969
30.87	21.41	52.28	95.0	82.5	70.2	54.9	48.5	8292
47.20	41.00	33.26	31.00	80.46	8046
47.67	47.00	33.79	31.00	81.46	8019
46.57	31.91	30.00	78.48	7545
46.07	32.02	78.09	7561
47.53	31.19	30.00	78.72	7758
30.03	19.05	49.08	99.0	98.0	97.0	89.5	78.5	7159
52.43	27.42	79.85	8029
53.69	50.00	0.42	54.11	99.8	98.6	91.4	69.8	57.7	8235

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